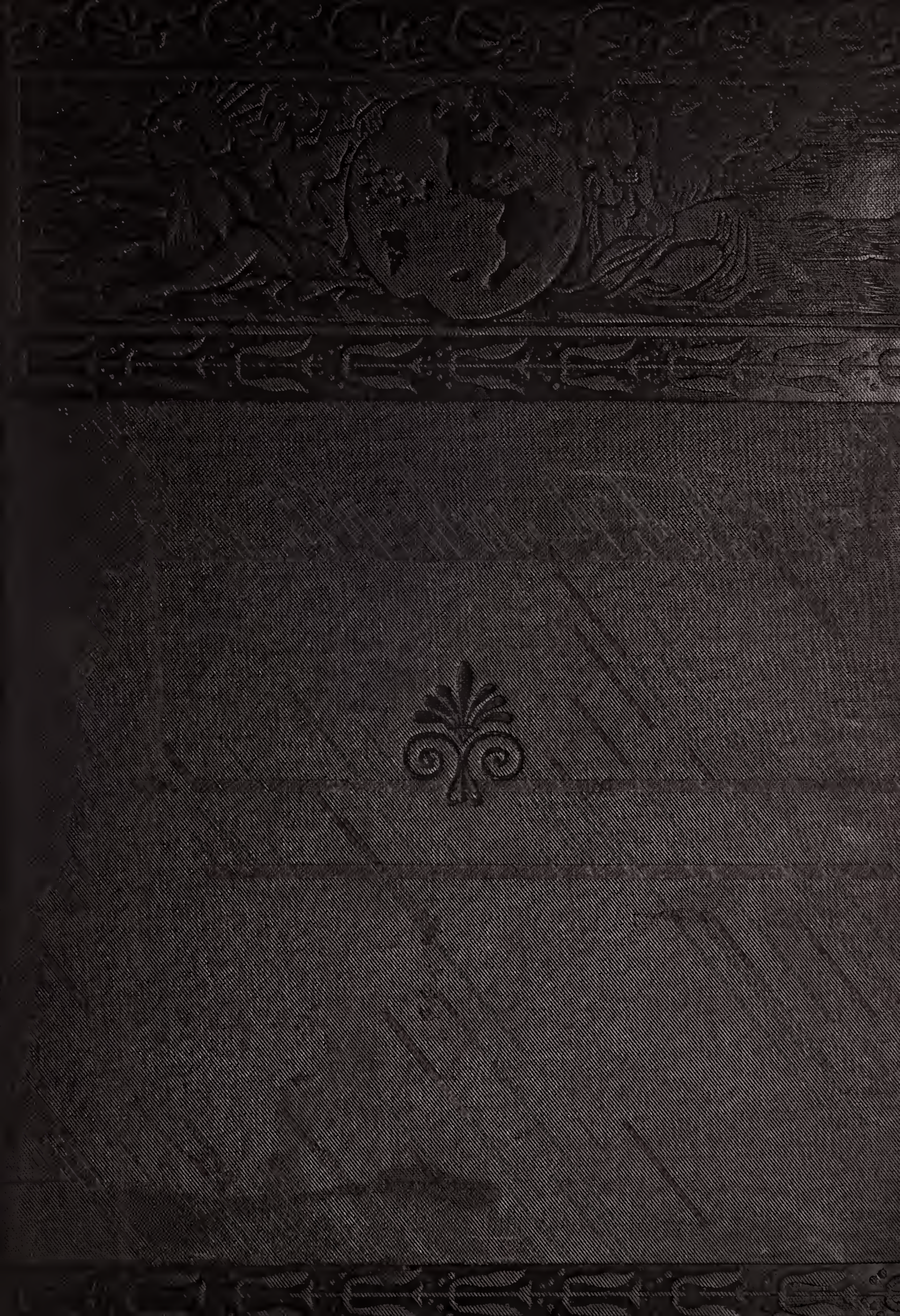




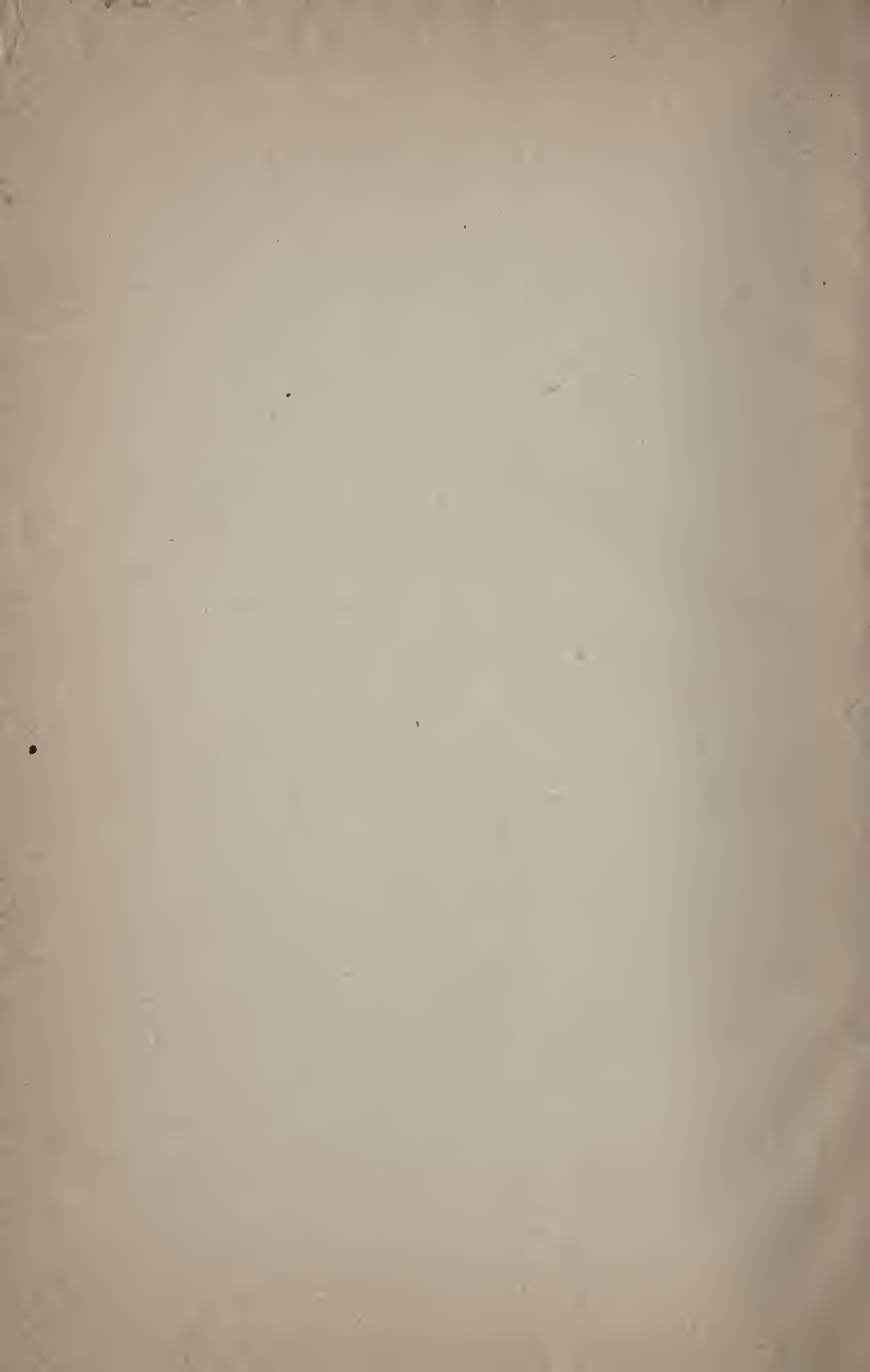
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THE NEW
CABINET CYCLOPÆDIA
AND
TREASURY OF KNOWLEDGE.

✓
THE NEW
CABINET CYCLOPÆDIA

AND
TREASURY OF KNOWLEDGE.

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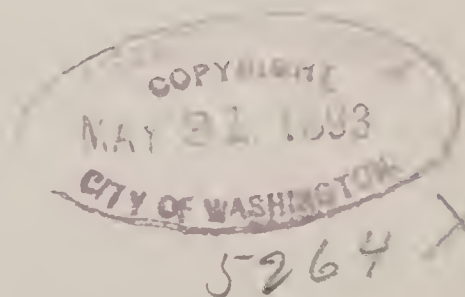
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EDITOR OF THE "IMPERIAL DICTIONARY," ETC.

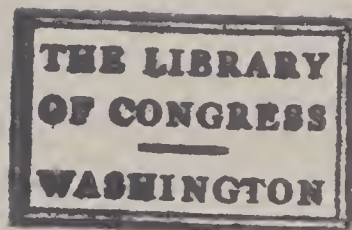
THE ARTICLES RELATING TO AMERICA REVISED AND EDITED BY
AINSWORTH R. SPOFFORD, LIBRARIAN OF CONGRESS,
AND EDITOR OF THE "LIBRARY OF CHOICE LITERATURE."

VOL. V.

PHILADELPHIA :
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LIST OF COLORED MAPS.

VOLUME V.

INDIA	Page	7
IRELAND	"	48
ITALY	"	71
LONDON	"	310
WORLD ON MERCATOR'S PROJECTION	"	458
MEXICO	"	471

KEY TO THE PRONUNCIATION.

The pronunciation of the words that form the titles of the articles is indicated in two ways: 1st, By *re-writing* the word in a different form and according to a simple system of transliteration. 2d, By marking the syllable on which the chief *accent* falls. Entries which simply have their accentuation marked are English or foreign words that present little difficulty, and in regard to which readers can hardly go far wrong. A great many of the entries, however, cannot be treated in this way, but must have their pronunciation represented by a uniform series of symbols, so that it shall be unmistakable. In doing this the same letter or combination of letters is made use of to represent the same *sound*, no matter by what letter or letters the sound may be represented in the word whose pronunciation is shown. The key to the pronunciation by this means is greatly simplified, the reader having only to remember one character for each sound. Sounds and letters, it may be remarked, are often very different things. In the English language there are over forty sounds, while in the English alphabet there are only twenty-six letters to represent them. Our alphabet is, therefore, very far from being adequate to the duties required of it, and still more inadequate to represent the various sounds of foreign languages.

The most typical *vowel* sounds (including diphthongs) are as shown in the following list, which gives also the characters that are used in the Cyclopædia to show their pronunciation, most of these being distinguished by diacritical marks.

ā, as in <i>fate</i> , or in <i>bare</i> .	<i>eu</i> , a long sound as in Fr. <i>jeûne</i> , = Ger. long
ä, as in <i>alms</i> , Fr. <i>âme</i> , Ger. <i>Bahn</i> =á of Indian names.	ö, as in <i>Söhne</i> , <i>Goethe</i> (Goethe).
ǎ, the same sound short or medium, as in Fr. <i>bal</i> , Ger. <i>Mann</i> .	<i>eu</i> , corresponding sound short or medium, as in Fr. <i>peu</i> =Ger. <i>ö</i> short.
a, as in <i>fat</i> .	ō, as in <i>note</i> , <i>moan</i> .
ǎ, as in <i>fall</i> .	o, as in <i>not</i> , soft—that is, short or medium.
ɑ, obscure, as in <i>rural</i> , similar to <i>u</i> in <i>but</i> , é in <i>her</i> : common in Indian names.	ö, as in <i>move</i> , <i>two</i> .
ē, as in <i>me</i> = <i>i</i> in <i>machine</i> .	ū, as in <i>tube</i> .
e, as in <i>met</i> .	u, as in <i>tub</i> : similar to é and also to <i>a</i> .
ê, as in <i>her</i> .	u, as in <i>bull</i> .
ī, as in <i>pine</i> , or as <i>ei</i> in Ger. <i>mein</i> .	ü, as in Sc. <i>abune</i> =Fr. <i>û</i> as in <i>dû</i> , Ger. <i>ü</i> long as in <i>grün</i> , <i>Bühne</i> .
i, as in <i>pin</i> , also used for the short sound corresponding to ē, as in French and Italian words.	ü, the corresponding short or medium sound, as in Fr. <i>but</i> , Ger. <i>Müller</i> .
	oi, as in <i>oil</i> .
	ou, as in <i>pound</i> ; or as <i>au</i> in Ger. <i>Haus</i> .

Of the *consonants*, b, d, f, h, j, k, l, m, n, ng, p, sh, t, v, z, always have their common English sounds, when used to transliterate foreign words. The letter c is not used by itself in re-writing for pronunciation, s or k being respectively used instead. The only consonantal symbols, therefore, that require explanation are the following:—

ch is always as in <i>rich</i> .	s, always as in <i>so</i> .
d, nearly as <i>th</i> in <i>this</i> =Sp. <i>d</i> in <i>Madrid</i> , &c.	th, as <i>th</i> in <i>thin</i> .
g is always hard, as in <i>go</i> .	th, as <i>th</i> in <i>this</i> .
h represents the guttural in Scotch <i>loch</i> , Ger. <i>nach</i> , also other similar gutturals.	w always consonantal, as in <i>we</i> .
ñ, Fr. nasal <i>n</i> as in <i>bon</i> .	x=ks, which are used instead.
r represents both English <i>r</i> , and <i>r</i> in foreign words, which is generally much more strongly trilled.	y always consonantal, as in <i>yea</i> (Fr. <i>ligne</i> would be re-written <i>lēny</i>).
	zh, as <i>s</i> in <i>pleasure</i> =Fr. <i>j</i> .

THE NEW CABINET CYCLOPÆDIA.

VOL. V.

Image, in optics, the spectrum or appearance of an object made by reflection or refraction. It is by means of optical images that vision is effected, or that the telescope and microscope are of use. See the articles *Optics*, *Eye*, &c.

Image Worship. See *Iconolatry*.

Imaginary Quantity, in algebra, such a quantity as $-a^2$ in the equation $x^2 = -a^2$, when to find the value of x we should require to take the square root of $-a^2$; and this is impossible. Any algebraic expression containing $\sqrt{-1}$ is called an imaginary expression. The employment of imaginary quantities systematically has been the foundation of some of the greatest modern discoveries and improvements in geometry.

Imagination, literally that faculty of the mind by which we can form mental *images* of things. Besides the power of preserving and recalling such conceptions, the imagination has the power to combine different conceptions, and thus create new images or mental pictures. It is this faculty which is more strictly termed imagination. In the creation of new images, or more properly in the combining of images which have previously been derived from objects of perception, the imagination operates according to the laws of the association of ideas. Its operations are nevertheless not wholly independent of the will, for by directing the attention to some leading thought, the will can determine the limits within which the laws of association are to act. Such free and yet regulated action of the imagination alone can give birth to the productions of the fine arts.

Imam (i-mām'), a class of Mohammedan priests. In Turkey they attend in the mosques, call the people to prayer from the minarets, perform circumcision, &c. In ecclesiastical affairs they are independent, and are not subject to the mufti, though he

is the supreme priest. They may quit their office and re-enter the lay order. The sultan, as chief of all ecclesiastical affairs, has the title of *imam*.

Imaus (i-mā'us), a name applied by the ancients sometimes to the Hindu Kush and the western part of the Himalayan range, and sometimes in a vague way to a range in Central Asia (supposed to be the Altaian Mountains), which they believed to divide the vast region to which they gave the name of Scythia, into two parts.

Imbecility, weakness of mind, such as puts a person considerably below the general run of mankind, but is not so great as to be called actual lunacy or idiocy, nor so well marked perhaps as to be classed under any one of the forms of insanity. Imbeciles sometimes display a considerable amount of intelligence in certain directions, and are often very cunning. They may be interesting, amusing, and even useful members of a community. Equity will not set a contract aside on the mere ground of imbecility; but its existence affords a material ingredient in examining whether it has been obtained fraudulently or by undue influence. The same principle prevails in the civil law, and in the Scottish system. As a general rule the court is ready to support the obligation of any contract that a person of weak mind has entered into, unless it is of such a nature that a person of sound mind would not have agreed to it, or unless there is suspicion of fraud. An imbecile person may be summoned as a witness, but the degree of credibility attaching to his evidence naturally depends very much on the amount of intelligence he displays, and on the nature of the circumstances regarding which his evidence is offered.

Imber, IMBER-GOOSE, EMBER-GOOSE, a name sometimes given to the great northern diver.

Imbro, or **IMBROS**, an island of European Turkey, west from the entrance to the Dardanelles, 18 miles long and 8 broad. It is mountainous, well wooded, and intersected with richly-fertile valleys, producing wine, honey, oil, cotton, and lead. It has several villages. Pop. 1000, mostly Greeks.

Imeritia, or **IMERETHI**, a Russian district on the south of the Caucasus, now included in the government of Kutais. It formed part of the Kingdom of Georgia in the 14th century, became afterwards independent, and in 1804 it was voluntarily ceded to Russia by the last of its sovereigns.

Immaculate Conception. See *Conception* (*Immaculate*).

Immersion, in astronomy, the disappearance of one heavenly body behind another or into its shadow. Immersion occurs at the beginning, and emergence at the end of an occultation or an eclipse.

Immortality, exemption from death; the state of everlasting life. The dogma of the immortality of the soul is very ancient. It is connected with almost all religions, though under an infinite variety of conceptions. By the immortality of the soul we understand the endless continuation of our personality, our consciousness, and will. There are so many reasons to render immortality probable, that with most nations the belief is as clear and firm as the belief in a god; in fact the two dogmas are intimately connected in the minds of most men. The hope of immortality must be considered a religious conviction. Reason and religion command man to strive for continued perfection. This duty man cannot relinquish without abandoning at the same time his whole dignity as a reasonable being and a free agent. He must, therefore, expect that a continuation of his better part, as the necessary condition for his progress in perfection, will not be denied to him. Hence the belief in immortality becomes intimately connected with our belief in the existence and goodness of God. Among rude peoples the life after death is usually regarded as a state of being not essentially different from the present—one in which the hunter shall renew his chase, and his corporeal senses shall have their accustomed gratifications. Among the ancient Greeks and Romans the spirits of the dead were believed to live in the other world as a sort of shadows, and the life after death was also considered as a shadow of the present. Among some peoples the imagination attributes changes of condition

to the future life, and the doctrine of transmigration, or the progress of the mind or soul in different stages, is developed. Connected with the belief in the immortality of the soul is the belief in a state where souls are purified after death, as existing among the Egyptians and many Christians. See *Purgatory*.

Immortelles (Fr.), a name for flowers, also known as *everlasting* flowers, and often made into wreaths for adorning graves.

I'mola, a town of Italy in the province of Bologna, on an island in the Santerno, 25 miles west by south of Ravenna. Besides its walls flanked by towers, it possesses an old castle situated on a commanding height, a cathedral and other churches. Pop. 11,372.

Impalement (Lat. *palus*, a stake), the putting to death by thrusting a stake through the body. This manner of inflicting death was known to the Romans, though not practised by them. It is still practised in some half-civilized countries.

Impana'tion. See *Consubstantiation*.

Impan'nel, to form a jury by entering the names on the roll or *panel*. See *Jury*.

Impas'to, the thickness of the layer or body of pigment applied to the canvas by an artist.

Impa'tiens, a genus of curious annuals which ranks among the Balsaminaceæ. One species, *I. Noli-tangere*, indigenous in England, is called *noli-me-tangere*, or touch-me-not. *I. balsamina* is much grown for the beauty of its flowers, and is well known as a highly ornamental annual by the name of garden balsam. The species are numerous, and inhabit chiefly the East Indies, although some extend into Europe, Siberia, and North America. The name refers to the elasticity of the valves of the seed-pod, which discharge the seeds when ripe or when touched.

Impeachment, an accusation and prosecution for a crime or misdemeanor, in which the House of Commons are the prosecutors, and the House of Lords the judges. The necessity of some tribunal distinct from the ordinary courts, for the trial of certain offences, or for any high misdemeanor in certain officers, is apparent, since the judges of the highest courts cannot in all cases safely be intrusted with the trial of each other. Impeachment is, however, seldom used, the last instance being that of Lord Melville in 1805. After sentence, the crown may pardon the offender. The question of guilty or not guilty is decided by a majority

IMPENETRABILITY — IMPRESSMENT OF SEAMEN.

of votes.—In the United States the procedure is similar to that of England, the House of Representatives being the accusers and the votes of two-thirds of the senate being necessary for a conviction.

Impenetrability, in physics, that property of matter which prevents two bodies from occupying the same space at the same time; or that property of matter by which it excludes all other matter from the space it occupies.

Impenes, a name given to swimming birds with small wings which have only rudimentary feathers, as the penguins.

Imperator, among the ancient Romans, a term originally applied to a military commander, one who held the *imperium*, or military power. In later times no one received this title who had not defeated a hostile force of at least 10,000 men. After the overthrow of the republic *imperator* became the highest title of the supreme ruler, and acquired the signification which we attach to the word *emperor*. It was still given, however, to triumphant generals, and, in this case, has its old signification. The emperors appear to have used it because they were considered as superior to all the generals. See *Emperor*.

Imperial, pertaining to an emperor or empire; thus, an *imperial* crown is such as is worn by the German emperor; the *Imperial* parliament is that of the United Kingdom.—A size of paper, measuring 30 in. by 22, is also called *imperial*.

Imperial Chamber. See *Chamber*.

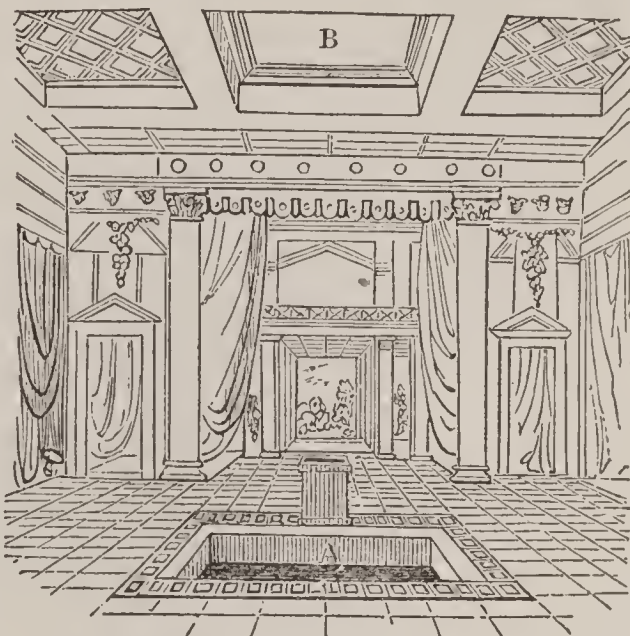
Impetigo, a skin disease consisting in an eruption of itching pustules, appearing in clusters, and terminating in a yellow, thin, scaly crust. It occurs most frequently on the extremities.

Impey Pheasant (*Lophophorus refulgens* or *Impeyanus*), a bird of the pheasant family (Phasianidæ) remarkable for the splendid colours and metallic lustre of the plumage of the male, whence it is called in India (of which it is a native) *monaul*, meaning bird of gold. It is found in the high and cold regions of the Himalaya, and is of the size of a small turkey. It obtained the name of Impey pheasant from the fact that Lady Impey was the first who attempted (unsuccessfully) to introduce the bird alive into Europe.

Implacentalia, the aplacental mammals. See *Aplacental*.

Impluvium (Lat. *in*, into, *pluo*, to rain), in ancient architecture, a term which de-

noted, in the houses of the ancient Romans, a basin in the middle of the atrium or entrance-hall, below the *compluvium* or open

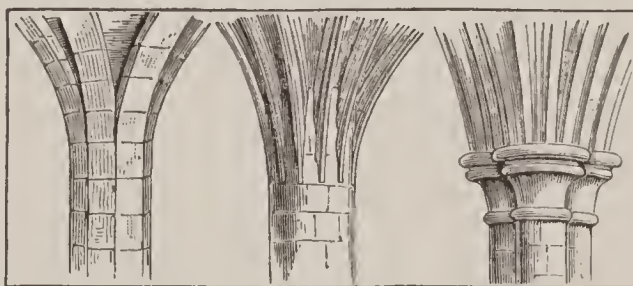


Roman Atrium—A, Impluvium; B, Compluvium.

space in the roof, to receive the rain. See *Atrium*.

Impoor, a kind of antelope, same as the Duykerbok (which see).

Impost, (1) a tax, tribute, or duty, particularly a duty or tax laid by government on goods imported. (2) In architecture, the point of junction between an arch and the column, pier, or wall on which it rests. It



Imposts.

1, Continuous. 2, Discontinuous. 3, Shafted.

is often marked by horizontal mouldings, though these may be absent. Imposts have received various names, according to their character. Thus, a *continuous impost* is where the mouldings are carried down the pier; a *discontinuous impost* where there are no mouldings, but the pier is of a different section from the arch; *shafted impost*s are where the arch mouldings spring from a capital and differ from those of the pier.

Impounding Cattle. See *Pound*.

Impressment of Seamen, the act of compelling persons, especially seafaring men,

to serve in the English navy. The power of impressing seamen, though still existing, has fallen into abeyance since the conclusion of the general war in 1815. Impressment was of ancient date, and uniformly practised throughout a long series of years. It is also recognized in many statutes, such, for instance, as exempted certain persons from impressment, though the power of impressing is not expressly granted in any acts of parliament.

Imprima'tur (Latin, 'let it be printed'), the word by which the licenser allows a book to be printed in countries where the censorship of books is exercised in its rigour. See *Books, Censorship of*.

Imprisonment, the restraint of a person's liberty, whether in a prison, the stocks, or by merely keeping in custody. It is usually inflicted by way of punishment, the power of sentencing to imprisonment being conferred on certain courts or magistrates, and strictly limited by law. A person may be imprisoned, however, who is merely accused of a crime, in which case he can demand to be released on bail. Imprisonment for ordinary debt is now practically abolished in Great Britain and the United States.

Impropriation, in the English Church, the transfer of a benefice to the possession of a layman, the annexing of benefices to ecclesiastical corporations being called *appropriation*, though they are sometimes identical. Appropriations were originally annexed to bishoprics, prebends, religious houses, &c.; but on the dissolution of the monasteries in the reign of Henry VIII. the appropriations of the several benefices belonging to them were given to the king, and were afterwards granted out from time to time by the crown. It was after this time that the term *impropriation* was introduced to denote a benefice in the hands of a layman. The appropriator deputed some person to perform divine service in such parish, who, being merely his deputy or vicegerent, was called *vicar*, and his stipend was at the discretion of the appropriator. The distinction therefore of a parson and vicar is that the former is entitled to all the ecclesiastical dues of his parish, while the vicar is in effect only the curate of the real parson (the appropriator), and receives but a part of the profits.

Improvvisato'ri, the name given in Italy to persons who compose and declaim extemporaneously a poem on any given subject, or sing it, accompanying their voice

with an instrument. This has long been a practice in Italy, and many of the *improvvisatori* have acquired considerable celebrity. The poet Metastasio at a very early period showed an extraordinary talent for this kind of composition, but the exercise of it cost so much effort that from a regard to his health he was obliged to give it up. Even at the present day Italy abounds in this class of poetical composers. The printed works of the *improvvisatori* who have been most admired have never passed mediocrity, and it is probable we should not have had such beautiful poems from Metastasio if he had not been obliged to renounce extemporaneous poetry.

Imputa'tion, as a term in Christian theology, is used to signify, on the one hand, the reckoning of the sins of man to Christ, and, on the other hand, the reckoning of the righteousness of Christ to believers.

Ina, or **INE**, king of the West Saxons in the 7th and 8th centuries. He succeeded Ceadwalla about 689, and after having obtained advantages over the people of Kent in 694 he turned his arms against the Britons, from whom he wrested Somersetshire and other parts of the west of England. He then made war on the Mercians; but the contest was terminated, without much advantage to either party, by a bloody battle in 715. He resigned his crown and went as a pilgrim to Rome (728), where he passed the rest of his days in devotion. He was one of the principal legislators of the Anglo-Saxons. His laws are the oldest known to us among the Anglo-Saxon kings, except those of the kings of Kent, and served as the foundation of the code formed by Alfred the Great.

Ina'gua, **GREAT** and **LITTLE**, two islands, the former about 40 miles from the eastern extremity of Cuba, low and intersected with lagoons, and affording good pasture land; area, 660 sq. miles; pop. 1500. Little Inagua is quite small.

Inaja' Palm (*Maximiliana regia*), a South American palm growing to the height of over 100 feet, with leaves 30 to 50 feet long. The spathes are so hard and woody as to serve for cooking food on the fire; they are also used as baskets, &c. The fruit is edible.

Inarching, the same as grafting by approach. See *Grafting*.

In articulo mortis, on the point of death; a phrase used in Scots law in regard to the executing of deeds.

INCA — INCLINED PLANE.

Inca, or **YNCA**, a word signifying 'chief,' which the natives of Peru gave to their kings and princes of the blood before the Spanish conquest. See *Peru*.

Incantation, a certain formula of words, supposed to have some magical effect, especially if uttered with the accompaniment of certain ceremonies. Incantations are still common as a part of popular medicine among the uneducated in many parts of England, having descended from the usage of Anglo-Saxon times.

Incarnation (Lat. *in*, and *caro*, *carnis*, flesh), a word used to express the manifestation of the Deity in the flesh under the human form; thus we speak of the *incarnation* of Christ. The Hindus believe in innumerable incarnations of their deities. The most celebrated are the nine incarnations of Vishnu. See *Avatar*.

In'cense, aromatic substances burned in religious rites on account of the sweet odour they emit. The custom of burning incense is ancient and widely spread. Among the Jews the practice was enjoined as part of the worship of the sanctuary (Ex. xxx. 27), the ingredients of the incense also being laid down, and it was to be burned on a special altar called the *altar of incense*. This altar was made of acacia (shittim) wood, and was overlaid with gold, hence it was also called the *golden altar*, as distinguished from the altar of burnt-offering, which was made of brass. The incense was burned daily—morning and evening. In ancient Egypt, Assyria, Babylonia, India, Greece, and Rome incense-burning was part of the worship of the gods, and it is still employed as part of the Buddhist ceremonial. Both the Greek and the Latin churches use incense in worship, but the practice cannot be shown to have existed among Christians till after the first four centuries. Among Catholics it is used at every high mass, at consecrations of churches, in processions, funerals, &c. In the English Church it is only employed by the high ritualistic section, but its use has never been prohibited.

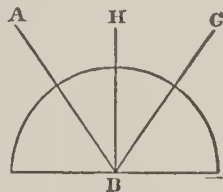
In'cest, sexual intercourse within the prohibited degrees, which by the laws of England and Scotland are founded on the Levitical code, and include degrees both of consanguinity and of affinity. (See *Leviticus*, chap. xviii.) In England incest is an ecclesiastical offence, and is left to the jurisdiction of the spiritual courts. In Scotland and some of the United States it is a criminal offence.

Inch'bald, **ELIZABETH**, English novelist and dramatic writer, born 1753, died in 1821. She married the actor Inchbald, who died in 1779. She continued on the boards about eight years, but retired from the stage in 1789, and devoted herself to literary pursuits. She wrote among other works two novels, which display much original thought and genuine pathos—the one entitled, *A Simple Story* (1791), the other, *Nature and Art* (1796). She edited the *British Theatre*, a collection of dramas, with biographical and critical remarks (25 vols. 1806–9); a collection of farces (7 vols.); and the *Modern Theatre* (10 vols. 1809).

Inchcolm (insh-kōm'), a small island of Scotland, in the Firth of Forth, off the coast of Fifeshire, with the ruins of a monastery founded by Alexander I. in 1123, of which Walter Bower, the continuator of Fordun, was abbot from 1418 till 1449.

Inchkeith (insh-kēth'), a small island of Scotland, in the Firth of Forth, off the Fifeshire coast, containing a lighthouse.

In'cidence, **ANGLE OF**, the angle which a ray of light falling on a reflecting or refracting surface makes with the perpendicular or normal to the surface. The angle of incidence ABH is always equal to the angle of reflection HBC .



Inclination, **MAGNETIC**, or **MAGNETIC DIP**. See *Dipping Needle*.

Inclination Compass, same as *Dipping Needle*.

Inclined Plane, a plane forming with the horizontal plane any angle whatever excepting a right angle. It is one of the mechanical powers by which a small force under certain conditions is used to overcome a greater force. When a body lies on an inclined plane part of its weight is supported, so that if a cord be fastened to it and pulled, a force less than the weight of the body acting in a direction parallel to the plane will prevent it from sliding, or will move it up the plane. Thus a heavy wagon is raised on an inclined road by a horse which would be quite unable to exert a pull equal to a quarter of the weight of the wagon. Neglecting friction, the force parallel to the plane necessary to raise the body is equal to the weight of the body multiplied by the vertical height through which it is lifted, divided by the distance it is moved along the plane.

In Cœna Domini, a papal bull, so called from its first words, it being annually read 'at the Lord's Supper' on Holy Thursday. Its earliest form was that promulgated in 1363 by Urban V. anathematizing all heretics and favourers of heretics without distinction. The bull was afterwards extended and modified by several popes to include those who imposed taxes upon the clergy for the needs of the state, and in its latest form (promulgated by Urban VIII. in 1627) specially anathematized all Hus-sites, Wickliffites, Lutherans, Calvinists, Unitarians, &c.; all schismatics, pirates who disturbed the Papal seas, forgers of Papal letters; all who should attack or conquer the Papal territory, &c. The bull was annually promulgated at Rome till the year 1770, when a much modified document took its place, this in its turn being withdrawn by Pius IX. in 1869.

Incombustible Cloth, cloth rendered un-inflammable by artificial means. This may be done by steeping the fabric in borax, phosphate of soda or ammonia, alum or sal-ammoniac; but these salts are not suitable for fine fabrics, and that which has been found to answer the purpose most effectually is tungstate of soda. A solution containing 20 per cent of this salt, along with 3 per cent of phosphate of soda, renders a fabric perfectly non-inflammable, and does not interfere with the ironing.

Income Tax, a tax levied directly from income of every description, whether derived from land, capital, or industry, first imposed in Great Britain in January, 1799, during the ministry of Mr. Pitt. It was repealed in 1802, but again imposed the following year under the name of property tax. In 1806 it was fixed at 10 per cent on all incomes above £150, there being a graduated scale below this, and industrial incomes under £50 being exempt. The tax was repealed in 1816, but again instituted in 1842, all incomes under £150 being exempted and all above charged at the uniform rate of 7*d.* in the pound. Since then it has continued to be levied at rates varying from 1½*d.* on incomes from £100 to £150, to 16*d.* on incomes above £150. At present (1890) incomes under £150 are exempted, and a deduction equal to the tax on £120 allowed on incomes under £400. In the United States an income tax was first imposed in 1862, of 3, 5 and 10 per cent. Strictly a war tax, it was repealed in 1871.

Incommen'surable, in mathematics, a

term applied to two magnitudes when they cannot both be measured by the same quantity, that is, when they do not contain it one or more times exactly. The diagonal and side of a square are an example.

Incubation (pathology), the period between the introduction of the morbid principle and the outbreak of the disease. It is then gathering head in the system, and indicated only by such general symptoms as loss of appetite or sleep, &c. In epidemic and contagious diseases the period of incubation is well defined.

Incubation, the mode in which birds commonly bring forth their young, that of sitting on the eggs till they are hatched by the natural heat of the body. In general it is the female which undergoes the labour of incubation, but among some species, chiefly of monogamous birds, the male relieves the female while she seeks her nourishment; in others the male feeds her. Some birds, like the cuckoo, abandon their eggs to be hatched by others. In a state of nature birds generally commence to sit in spring. The time of incubation varies with different species, but is always the same with the same species. In the humming-birds it is 12 to 14 days; in the swallow and lark, 15; the canary, from 15 to 18; crow, 20; common hen, 21; pheasant, partridge, &c., 22; peacock and turkey, 30; swan, 40-45; cassowary, 62.—*Artificial incubation*, the hatching of eggs by prolonged artificial warmth, has been long practised amongst the Egyptians and Chinese. Attempts have been made to carry out the artificial system on a considerable scale, both in France and England, but without much success.

In'cubus, a spirit or demon, to whom was formerly ascribed the oppression known by the name of *nightmare*. These demons play a somewhat important part in the superstitions of the middle ages.

Incum'bent, in England, a clergyman in possession of an ecclesiastical benefice.

Incumbered Estates Act, an act of the British parliament passed in 1848 to facilitate the sale of incumbered estates in Ireland. In 1858 the powers of the Incumbered Estates Court were transferred to the Landed Estates Court, and extended to unincumbered property. The gross amount of sales effected under the act from October 1849 to August 1859 was £25,190,839.

Incunab'ula, a term applied by bibliographers to editions of books printed during the early period of the art, and is generally



INDIA

By Keith Johnston F.R.S.E.

English Miles
0 100 200 300 400
Scale of Maps 10 m. 1 in.
Railways thus —
Native States are coloured yellow

A 65 Longitude E. 70 of Greenwich 75

F 85 F 90 G 95 H 100 I

Gebbie & Co. Philadelphia

limited to works which appeared previous to 1500.

Indem'nity, a term frequently employed in politics and jurisprudence. It is used in various significations, but is usually applied to an act of the legislature passed for the purpose of relieving individuals, especially in an official position, from the penalties to which they may have rendered themselves liable by some violation of the law whether by act or omission, or in case of members of government in consequence of exceeding the limits of their strict constitutional powers.

Inden'ture, a deed entered into between two or more parties, and so called because duplicates of every deed between two or more parties were once written on one skin, which was cut in half, with a jagged or indented edge; so that they were seen to belong to one another. See also *Apprentice*.

Independence, Jackson co., Mo. Pop. 6380.

Indeterminate, in mathematics, having an indefinite number of values or solutions. *Indeterminate analysis* is a branch of algebra in which there are always given a greater number of unknown quantities than there are independent equations, by which means the number of solutions is indefinite.

Index Librorum Prohibitorum ('list of prohibited books'), in the Roman Catholic Church, a title used to designate the catalogue or list of books prohibited by ecclesiastical authority, on account of the heretical opinions supposed to be contained in them, or maintained by the authors or editors of them: when the list or catalogue is of books allowed to be read after correction or alteration, agreeably to the orders of the Papal authorities, it is termed *Index Expurgatorius*. Such prohibitory catalogues have been in use from a very early period in the history of the church, commencing with a list of prohibited books drawn up by a council held at Rome in 494, or even earlier with the proscription of the writings of Arius. These prohibitions, in fact, were often issued by other than the Papal authorities. In 1408 a synod at London prohibited the reading of the books of Wickliffe. In 1544 the Faculty of Theology in Paris published a catalogue of books censured by them, and in 1546 the University of Louvain published an index of books regarded as dangerous. The indexes of the church were a subject of consideration at the Council of Trent, which referred the business of drawing up a complete index to

a select committee under the pope. Their Index was published in 1564, and besides the catalogue of prohibited books contains general rules relative to such books. In 1586 a special ecclesiastical board, the Congregation of the Index, was formed, consisting of a cardinal-prefect, with other cardinals and examiners of books, with authority to judge of new works, to indicate those of which the reading is entirely prohibited, and those which are permitted after correction, and also to grant to learned and pious men the right of reading prohibited works. The most important editions are those of Alexander VII. in 1664, and of Benedict XIV. in 1758. The latest edition appeared in 1881, with a supplement in 1884. In 1607 the first volume of an Index Expurgatorius was published at Rome, edited by the Dominican Brasichelli. In Spain the Inquisition maintained its right to issue its own index, the last edition of which, dated 1790, was reprinted, with a supplement in 1805. The Spanish indexes, which are mostly both prohibitorial and expurgatorial, contain most of the books found in the Roman index and many others besides.

India, a name properly applicable to the whole of the British Indian Empire, which includes Burmah (which see), but popularly restricted to the great central peninsula of Southern Asia. It forms an irregular triangle, insulated from the rest of Asia by the almost impassable ranges of the Himalayas, the Hindu-Kush, and Suleiman Mountains, and by the Indian Ocean. Its length north and south, and its greatest breadth east and west, are both about 1900 miles. Within these borders is an area of about 1,560,160 sq. miles, with a population (1891) of 287,223,431. India may be regarded as consisting of three separate regions, well defined by differences of soil, climate, productions, and population. The first is the region of the Himalayas. Immediately south of the Himalayas lies the vast North Indian Plain, containing the most fertile and densely-populated portions of the empire. South of the northern plain rises the third region of India, the triangular plateau of the Deccan, which has a general elevation of from 2000 to 3000 feet. Its northern scarp is formed by a number of hill ranges known as the Vindhya Mountains. The other two sides of the Deccan are formed by the Eastern and Western Ghâts, which stretch southwards along the eastern and western coasts of India, the latter

INDIA.

rising in the Nilghiris or Neilgherries to the height of 8760 feet. (See *Ghâts*.) The vast North Indian plain is watered by three distinct river systems, which collect the drainage of both the northern and southern slopes of the Himalayas. The first of these systems rises on the northern side of the Himalayas, and makes way through their western ranges into the Punjab as the Indus and Sutlej. The second rises in the same quarter, not far from the sources of the Indus and Sutlej, but flows in an opposite direction, and enters India on the east as the Brahmaputra of Assam and Eastern Bengal. As these two systems convey to India the drainage of the Tibetan slopes of the Himalayas, so the third system, the Ganges, with its tributary the Jumna, drains the southern slopes; traverses the central part of the Indian plain; unites near its mouth with the Brahmaputra, and forms the immense delta known as the Sunderbunds. The Ganges for thousands of years has occupied a prominent place in Indian civilization, and was the sole channel of traffic between Upper India and the seaboard until the opening of the railway system in 1855. In the Deccan the Nerbudda and Tapti carry the drainage of the southern slopes of the Vindhya into the Gulf of Cambay; and the Godavari, the Kistna (Krishna), and Cauvery rise in the Western Ghâts, and traverse the whole of the central table-land, reaching the sea on the eastern shores of the peninsula. The Indian rivers in the lower portions of their courses afford a natural system of irrigation, but in the higher parts an extensive system of canal irrigation is required. The Ganges and Jumna canals alone irrigate an aggregate area of about three million acres. The coasts of India have very few indentations, and consequently few good natural harbours. There are no lakes of any extent, Chilka and Kolair on the east coast being the largest.

Climate.—In Southern India the climate, of course, is tropical, and generally the heat is very great. Among the higher elevations of the Himalayas an Alpine climate prevails. The Indian plains are, especially in summer, sultry, unhealthy, and partly barren. The Deccan and the slopes of the Himalayas enjoy a temperate climate. The climate of the Nilghiris is healthy and pleasant, and several sanatoria for Europeans have been established there, as well as on the Himalayas. Throughout the entire country there are only two annual seasons, the dry season

and the rainy season. The rainfall depends upon the monsoons. On the western coast the rainy season begins with the south-west monsoon, and lasts from May till November; on the east coast the rainy season, following the south-east monsoon, lasts from November till March. The rainfall, however, is distributed with great irregularity.

Botany and Zoology.—The flora of India offers nothing very distinctive. In the Himalayas it has to a considerable extent a European character; in the south it is tropical. Many plants of temperate climates, such as wheat, barley, European vegetables, &c., are grown in the north-western and other parts, while various products of warmer regions are also cultivated, such as cotton, rice, indigo, oil-seeds, jute, tobacco, sugar-cane, cocoa-nut, date, and other palms, spices, &c. Coffee, tea, and cinchona, though of recent introduction, are now extensively cultivated in India, the first particularly on the slopes of the Western Ghâts and in the Nilghiris. The tea-plant is also grown in the south, but especially in Assam and along the lower slopes of the Himalayas. European fruits abound, and among cultivated fruits may be mentioned the mango, plantain, pomegranate, citron, orange, lime, melon, fig, almond, pine-apple, guava, jack, and tamarind. Amongst trees the teak forests under the protection of the government are of most economic value. The bamboo, the banyan, the sappan, the saul, &c., are all characteristic of Indian forest scenery. In Bengal and some other parts the natives live chiefly on rice, but millet is the staple food grain, barley, wheat, with sweet-potatoes, onions, garlic, &c., being also largely used. Opium is cultivated in Bahar, Benares, and Malwa. The vast forests of India are tenanted by great numbers of wild animals, birds, and reptiles. Large herds of elephants are still met with in Nepaul, Eastern Bengal, and the Nilghiris; the bear, the wild boar, and rhinoceros chiefly in the woods of the Eastern Himalayas; the tiger is found in every part of the country; the lion is now almost extinct. Other carnivorous mammals are the leopard or panther, cheetah, wolf, fox, jackal, and hyena. Several antelopes and deer, wild sheep and goats, the wild ass, the great gaur ox or 'bison,' the wild buffalo, are among the fauna. Snakes and reptiles in all varieties are very numerous, and the cobra and other snakes cause numerous deaths. Amongst domestic animals are oxen, camels, horses,

INDIA.

mules, sheep, and goats. Of birds, eagles, vultures, the peacock, parrakeets, the adjutant-bird, &c., are characteristic species. Fish are plentiful and in great variety.

Minerals.—India is richly endowed with minerals; hardly a single metal seems to be wanting; but they are not worked to any extent. Coal, iron, and salt receive most attention.

Divisions, Administration, and Population.—In 1858 the administration of the British possessions in India was transferred from the East India Company to the crown, and in 1877 the British queen assumed the title of Empress of India. The country has long been divided into the three presidencies of Bengal, Madras, and Bombay; but the first of these was latterly subdivided into several provinces, and its name has now little or no administrative significance. The lieutenant-governors, chief-commissioners, and other officers at the head of the various divisions are subordinate to the governor-general or viceroy, representing and appointed by the crown, but each has a large measure of independence. The governor-general in council has power to make laws for all persons within the Indian territories under British rule, and for all subjects of the crown within the allied native states. He acts under the orders of the Secretary of State for India, who is assisted by a council of fifteen and is always a member of the British cabinet. In India the supreme executive and legislative authority is vested in the governor-general, the capital being Calcutta. The following are the administrative divisions directly under Britain (1891): *Lieutenant-governorship of Bengal* (151,543 sq. m., 71,346,987 inhab.); chief towns, Calcutta, Patna, Gaya. *Lieut.-governorship of the North-western Provinces and Chief-commissionership of Oudh* (107,503 sq. m., 46,905,085 inhab.); chief towns, Allahabad, Benares, Agra, Cawnpore, Lucknow, Bareilly, Meerut. *Lieut.-governorship of the Punjab* (110,667 sq. m., 20,866,847 inhab.); chief towns, Lahore, Delhi, Amritsar, Peshawar. *Chief-commissionership of the Central Provinces* (86,501 sq. m., 10,784,294 inhab.); chief towns, Nagpore, Jubbulpore. *Chief-commissionership of Assam* (49,004 sq. m., 5,476,833 inhab.). *Ajmere, Berar, Coorg, and the Andaman Islands* (22,042 sq. m., 3,628,513 inhab.). *Presidency of Madras*, (141,189 sq. m., 35,630,440 inhab.); chief towns, Madras, Trichinopoly, Calicut. *Presidency of Bombay* (125,144 sq. m., 18,901,123

inhab.); chief towns, Bombay, Poonah, Ahmadabad, Surat. *Chief-commissionership of Burmah* (171,430 sq. m., 7,605,560 inhab.); chief towns, Rangoon, Moulmein, Mandalay. Besides these provinces of India under direct British administration there are a number of native or feudatory states, the relations of which to the British administration are somewhat varied. Practically, however, they are all more or less under control of the Indian government. Their area in 1891 was 595,167 square miles, and their population 66,050,479. Gujerat, Rajputana, Haidarabad, Mysore, Orissa, and Travancore are important native States. The total population of India, 1891, was 287,223,431.

The total European and native army numbers 218,786, the native army (144,755) being officered by Europeans. The armies of the feudatory or independent states of India number 349,835 men.

Revenue, Money, Weights, &c.—The total revenue, according to the budget-estimate of year 1893, was £58,911,933 (calculating the rupee at 1s. 4d., for its actual value has not exceeded 1s. 5d. for some years), and the expenditure about the same. The public debt, 1891, was £145,617,379. The chief source of revenue is the land-tax, which yields from £20,000,000 to £23,000,000 annually. About 70 per cent of the population are engaged cultivating the soil, while only about 3 per cent reside in towns of over 50,000 inhabitants. Opium, which forms a government monopoly, and salt, on which a considerable duty is levied, are the other two important sources of revenue. The chief currency in India is silver, and the amount annually coined is large. A government paper currency was introduced in 1861. Circles of issue with subordinate agencies were established in the chief towns; and notes of from 5000 to 10,000 rupees were made a legal tender within the circle. The chief money denomination is the *rupee*, which is divided into 16 *annas*, the *anna* again being equivalent to 4 *pice*. The primary standard of weight, called the *scr*, is equal to the French kilogramme, or 2.205 lbs. A weight in common use is the *maund*, in Bengal 82 lbs., in Bombay 28 lbs., in Madras 25 lbs. By an act passed in 1889 the imperial yard is made the standard measure of length.

Communications, Trade, &c.—Some of the irrigation canals as well as the rivers supply means of internal navigation, but the construction of railways has been the most

INDIA.

important step taken to render the internal communications of India permanently efficient. A considerable portion of the railway system was constructed by companies on whose capital interest at the rate of 5 per cent was guaranteed by government. Government, however, no longer intrusts the railways to private enterprise, and all lines sanctioned by it are now constructed by the state. The total sanctioned mileage open and under construction in 1892 was 17,564 miles. There were (1891) 949 telegraph offices, with about 113,512 miles of wire. The imports, including bullion and specie, for year ending March, 1892, amounted to £56,103,363, and the exports to £74,306,852. About half the imports consist of cotton goods; the exports comprise cotton, opium, oil-seeds, rice, wheat, jute, indigo, tea, cotton goods, &c.

Inhabitants, Languages, &c.—India has been peopled by several races which have now become more or less mixed. The Hindus, who are partly of Aryan or Indo-European origin (see *Indo-European Languages*), partly of non-Aryan origin, are by far the most numerous. In the south dwell people of a non-Aryan and Dravidian stock; and the remainder is made up of Arabs, Parsees, Mongolians, &c. The Europeans number about 121,000, and in addition there are about 110,000 Eurasians, *i.e.* the progeny of Hindus and Europeans. Of non-Aryan languages there are about 150 dialects. The Dravidian languages, the chief dialects of which are the Tamil, Telugu, Kanarese, and Malayalam, are spoken by about 28 millions of people in Southern India. The principal of the modern Aryan vernaculars derived from the ancient Sanskrit and Prakrit are Hindi, Marathi, Punjabi, Bengali, Uriya, Sindhi, and Gujerati. Hindustani, a corrupted form of Hindi filled with Persian and Arabic words, is the language of the Mohammedan conquerors of India, and has been adopted as the official language and means of general intercourse throughout the peninsula. The leading religion is Brahmanism, the professed creed of the majority of the Hindus and the religion most distinctive of India. It reckoned 207,731,727 adherents in 1891. Large numbers in the north and north-west are Mohammedans (57,321,164). Buddhists number about 7,131,361; Parsees or Fire-worshippers 89,904; Sikhs 1,907,833. Among the Hindus the caste system still prevails. See *Brahmanism*.) European

missionaries have long been active, but only a mere fraction of the people are as yet Christians (2,284,380). Education is now making good progress, schools and colleges of all kinds having been established throughout the country. The pupils, however, only number about 3,195,220 in all. There are universities (examining bodies only) at Calcutta, Bombay, and Madras, besides other two at Lahore and Allahabad.

History.—The early history of India is obscurely written in the myths of Sanskrit literature, but the first fact of any certainty is that about the year 2000 B.C., or even earlier, an Aryan people of comparatively high civilization descended from the mountain regions of the north-west into the plains of India and subdued the original inhabitants there. The expedition of Alexander the Great to the Indus in B.C. 326 gives us a momentary glimpse of that part of India; but between his invasion and the Mohammedan conquest there is little authentic political history of India. In the 3d century B.C. Buddhism was established throughout India, but it afterwards entirely gave way to Brahmanism. The first six centuries of the Christian era were occupied by struggles between the native dynasties and invaders from the north-west. In the 8th century the tide of Mohammedan conquest began with Kasim's advance into Sind (711 A.D.). But the Mohammedans were again driven out in 828, and for more than 150 years afterwards the strong feudal and tribal organizations of the northern Hindu kingdoms was a barrier to the Mussulman advance. At length in the year 1001 Mahmud of Ghazni reduced the Punjab to a province of Ghazni, and the Mohammedan power was gradually extended into Southern India. In 1398 Timur or Tamerlane led a great Mogul (or Mongol) invasion of India, and after sacking Delhi retired into Central Asia. In 1526 Sultan Baber, a descendant of Tamerlane, founded the Mogul Empire in India. His grandson Akbar reigned from 1556 to 1607, and extended his power over most of the peninsula, being distinguished by his justice and his tolerance in matters of religion. His son Jehanghir received an ambassador from James I. in 1615. During the reign of his successor, Shah Jehan, famous for his architectural magnificence, the Mahrattas began to be formidable in Southern India. Shah Jehan was deposed in 1658 by his youngest son Aurengzebe, who made war successfully with the Afghans, the Rajputana tribes, and

the rising power of the Mahrattas. The Sikhs, a Hindu sect, formed a religious and military commonwealth in the Punjab in 1675. On the death of Aurengzebe in 1707 the Mogul empire began to decline, Mohammedan viceroys like the Nizam and the ruler of Oudh asserting their independence, while the great Hindu states of the Sikhs, the Rajputs, and the Mahrattas began to harass the decaying empire. In 1738 Nadir Shah of Persia swept down on Hindustan, sacked Delhi, and carried away sixty millions sterling of treasure. The two immediate successors of Aurengzebe, Bahadur Shah and Jahandar Shah, were incapable rulers, practically under the control of the vizier Zulfikar Khan. The three following were mere names under cover of which Husain Ali, governor of Behar, and Abdulla, governor of Allahabad, controlled affairs. During the reign of Mohammed Shah the Mahrattas, who had already subdued the Deccan, wrung first Malwa (1743) then Orissa (1751) from the feeble grasp of the Mogul emperor. The same year saw the first inroad of the Afghan prince Ahmed Shah, followed in quick succession by other three invasions, to repel which the assistance of the Mahrattas was obtained. In 1761 the decisive battle of Panipat was fought between the Afghans and the Mahrattas, and ended in the defeat of the latter. The victor Ahmed Shah still recognized the Emperor Shah Alam, but the dignity was little more than nominal. Shah Alam was succeeded in 1806 by Akbar II., who was succeeded in turn by Mohammed Bahadur Shah, the last Mogul emperor, who died at Rangoon a British state prisoner in 1862.

In the beginning of the 16th century the Portuguese, following in the wake of Vasco da Gama, had established factories and fortresses on the coasts of Malabar, and soon extended their power over nearly all the ports and islands on the coasts of Persia and India. In 1595 the Dutch gained a footing in India. The English East India Company had formed commercial settlements in India as early as 1613, Surat being the chief station. (See *East India Company*.) A grant of a small territory around Madras was received from the Rajah of Bijnagar in 1639, on which was erected the fort of St. George. Madras became a presidency in 1654. Calcutta, ultimately the seat of government in India, was settled in 1690, and became a presidency in 1707. The English early came into collision with the

Portuguese and Dutch, but it was the struggle with the French in India, whose first settlements were founded in 1604, for influence over the native princes, that led step by step to the establishment of the British empire in India. The first conflict with the French took place in 1746, when the English lost Madras, which was, however, restored by the treaty of Aix-la-Chapelle. In 1751 Dupleix, the French governor at Pondicherry, was powerful enough to place creatures of his own on the thrones of the Deccan and the Carnatic. The English supported rival candidates, and the result was a second war, which left English influence predominant in the Carnatic, though the French still controlled the Deccan. The most memorable incident in this war was Clive's capture of Arcot. About this time important events took place in Bengal, then a subordinate presidency to that of Madras. The Nawab of Bengal, Siráj-ud-Daulá (Surajah Dowlah), attacked the English settlement at Calcutta with a large army, forced it to capitulate, and thrust the prisoners, to the number of 146, into the Black Hole or common prison of the garrison, a room 18 feet square, with two small windows. After a night of unparalleled suffering only twenty-three were found alive in the morning. Clive was at once sent with an armament from Madras, recovered Calcutta, attacked and took the French settlement at Chandernagore, routed the Nawab's army at the battle of Plassey (23d June, 1757), and placed Mir Jaffier on the vice-regal throne, with consent of the Mogul court. In the south the English were equally victorious. A force despatched by Clive took Masulipatam, and the victory gained by Coote at Wandewash on 22d January, 1760, completed the destruction of the French power in India.

In Bengal Mir Jaffier soon found himself unable to meet the exorbitant claims of his allies, and in 1760 he was deposed in favour of his son-in-law Mir Kasim, who agreed to pay the balance due by Mir Jaffier as well as grant the districts of Burdwan, Midnapore, and Chittagong to the English. But disputes soon led to a war, in which Mir Kasim was worsted and forced to flee. The British retained the collectorship or fiscal administration of Bengal, Behar, and Orissa, under the fiction of a grant from the Mogul emperor. A nominal native ruler, however, was still appointed in the shape of a nawab, who received an allowance of £600,000, and the actual collection

of the revenues was still left to the native officials. This system of double government established by Clive was abolished in 1772 by Warren Hastings, who appointed English officers to collect the revenues and preside in the courts, and thus laid the foundations of the present system of British administration in India. In 1774 Hastings was made governor-general of India. Amongst the notable measures of his vigorous rule were the refusal of the £300,000 of the Bengal tribute to the Mogul emperor, the sale of the provinces of Allahabad and Kora (assigned by Clive to the emperor in 1765) to the Nawab of Oudh, and the loan of British troops to the same nawab for the subjection of the Rohilla Afghans. For these and other acts, such as the extortion of heavy fines and forfeitures from the Begum of Oudh and the Rajah of Benares, Hastings was impeached on his return to England. (See *Hastings*.) In 1778 the intrigues of the Bombay government led to the first war with the Mahrattas, in which the British arms were only saved from disgrace by the achievements of the Bengal army which Hastings sent to the aid of the other presidency; and in the war with the Sultan of Mysore the diplomatic skill of Hastings, and the valour of the Bengal troops under Sir Eyre Coote, again won victory for the British. In 1786 Lord Cornwallis succeeded Hastings as governor. His rule is memorable chiefly for the war with Tippoo Sultan of Mysore, which terminated in the sultan having to surrender one-half of his dominions to the British and their allies. Sir John Shore succeeded as governor-general in 1793. He was followed by the Marquis of Wellesley, who arrived in 1798, and whose policy eventually made the British power paramount from the Himalayas to Cape Comorin. Under him Tippoo of Mysore was completely overthrown (1799) and the second Mahratta war successfully concluded, Sir Arthur Wellesley (latterly Duke of Wellington) having won the victory of Assaye (23d Sept. 1803), and General Lake that of Laswarce (1st Nov. 1803). In 1805 Lord Cornwallis went out as governor-general for the second time. He died soon after his arrival, and was succeeded by Sir George Barlow, and he by Lord Minto in 1807. In 1809 some disturbances at Travancore and Cochin led to these regions being placed under British control. During the governorship of the Earl of Moira (Marquis of Hastings, 1814-23) there was a war with

the Goorkhas of Nepaul, which after a short struggle ended with the cession to the British of Kumáon; and another with the three great Mahratta princes, the Peshwá of Poona, the Rajah of Nágpur, and Holkar of Indore. The Peshwá's territory was annexed; the other Mahratta princes were compelled to accept alliances placing them under British protection. A new province, the nucleus of what are now the Central Provinces, was formed out of territory recovered from the Pindáris. In 1823 Lord Amherst succeeded as governor-general. During his administration the first Burmese war arose, and was concluded in 1826 by the cession to the British of the provinces of Aracan and Tenasserim. Under Lord William Bentinck's rule (1828-35) administrative reform and the moral elevation of the peoples of India were chief subjects of consideration. In 1836 Lord Auckland assumed the governorship. Two years later the Afghan war broke out, and terminated in the disastrous British retreat. (See *Afghanistan*.) During Lord Ellenborough's administration Sind was annexed. Sir Henry (afterwards Lord) Hardinge succeeded in 1844, and the year following the Sikhs, originally a religious sect who had conquered the Punjab, crossed the Sutlej in great force. Four hotly-contested battles, at Mudki, Firozshah, Aliwál, and Sobráon, left the British masters of the field. Part of the Sikh territory was annexed, and the infant Dhuleep Singh recognized as rajah of the rest. During the governor-generalship of the Earl of Dalhousie, 1848-56, a new war broke out with the Sikhs, and after their final defeat by General Gough at Gujerat, 21st February, 1849, the Punjab was annexed to the British dominions. This was immediately followed by the second Burmese war, ending in the annexation of Pegu, 20th June, 1853. The Indian states of Sattara, Jhansi, and Nágpur were, on the failure of the native succession, annexed to the British possessions, 1852-56, and Oudh also brought directly under British rule. During the same administration the extensive scheme of Indian railways and telegraphs and steamship connection with Europe *via* the Red Sea was planned and inaugurated, the Ganges Canal opened, and the Punjab Canal begun.

The administration of Viscount Canning (1856-61) was distinguished by a short war with Persia, and especially by the great Sepoy mutiny. Several outbreaks among

INDIA.

the native soldiers took place during March, 1857. The first formidable revolt, however, was at Meerut on 10th May, where the Sepoys of the 3d Light Cavalry, assisted by the 11th and 20th Regiments of infantry, rose and massacred the Europeans. They then fled to Delhi, where they were immediately joined by the native garrison. Here another massacre took place, and the dethroned descendant of the Moguls once more assumed the sovereignty. The revolt spread rapidly through the North-western Provinces and Oudh, down into Lower Bengal. Only in the Punjab the prompt measures of the governing officials in disarming the Sepoys prevented an outbreak, and the Sikh population continued steadily loyal. Wherever the mutiny broke out it was attended with savage excesses; women were outraged, and Europeans without distinction of age or sex barbarously murdered. At Cawnpore the revolted Sepoys were headed by Nana Sahib, the heir of the last Peshwá of the Mahrattas. After a heroic but fruitless attempt to defend themselves, the Europeans capitulated on the sworn promise of Nana Sahib to allow them to retire to Allahabad. On the 27th the survivors, about 450 in number, were embarking when they were attacked by the Nana's troops, and the men indiscriminately massacred. The women and children, 125 in number, were carried back to Cawnpore and kept till the 15th of July, when they were all cut to pieces on the approach of Havelock's army. Cawnpore was stormed the day following. At Lucknow Sir Henry Lawrence had the foresight to fortify and provision the Residency, where the garrison held out till relieved by Havelock and Outram on 25th Sept. But Havelock was in turn besieged, and was with difficulty relieved (Nov. 17) by Sir Colin Campbell, afterwards Lord Clyde. Delhi, meanwhile, had fallen, chiefly owing to the skill and valour of Sir John Lawrence. By May, 1858, when Bareilly was taken, Sir Colin Campbell and Sir Hugh Rose had restored order, and the mutiny was at an end.

In 1858 the direct sovereignty of India, and the powers of government hitherto vested in the East Indian Company, were vested in the British crown. Lord Canning returned to England early in 1862, and was succeeded by the Earl of Elgin, who died in 1863. Sir John (afterwards Lord) Lawrence was governor-general from 1863 to 1868, when he was succeeded by the Earl of

Mayo, who did much to develop the material resources of the country by removing the restrictions upon trade between the different provinces, and constructing roads, canals, and railways. He was assassinated by a Mohammedan fanatic in the Andaman Islands, 8th February, 1872. Lord Northbrook became viceroy in 1872. During his administration a famine in Lower Bengal, successfully obviated by a vast organization of state relief (1874), the dethronement of the Gaekwár of Baroda for disloyalty (1875), and the tour of the Prince of Wales through India (1875-76), were the chief events. In 1876 Lord Lytton was appointed viceroy, and on January 1, 1877, Queen Victoria was proclaimed Empress of India at Delhi. In 1877-78 another disastrous famine occurred, and despite the most strenuous efforts of the government over five million persons are said to have perished. In 1878 the intrigues of Shir Ali, amir of Afghanistan, with Russia, led to a declaration of war on the part of the British. After two campaigns Abdurrahman Khan was established on the Afghan throne by British arms. (See *Afghanistan*.) In 1880 Lord Ripon succeeded as viceroy; being followed in 1884 by Lord Dufferin, under whose rule took place the annexation of Upper Burmah on 1st January, 1886. The present viceroy, the Marquis of Lansdowne, took office in 1888.

India, ORDERS OF KNIGHTHOOD IN, consist of *The Most Exalted Order of the Star of*



Insignia of the Order of the Star of India.

India, instituted in 1861, and comprising the Viceroy of India as Grand Master, and a number of Knights Grand Commanders

INDIA MATTING — INDIAN ARCHITECTURE.

(G.C.S.I.), Knights Commanders (K.C.S.I.), and Companions (C.S.I.); *The Most Eminent Order of the Indian Empire*, instituted 1st Jan. 1878, and comprising the Viceroy of India as Grand Master, a number of Knights Grand Commanders (G.C.I.E.), Knights Commanders (K.C.I.E.), and Companions (C.I.E.); and *The Imperial Order of the Crown of India*, instituted 1st Jan. 1878, and comprising the Princess of Wales and the princesses of the blood-royal, and other British and Indian ladies.

India Matting, a matting woven from the stems of *Papyrus Pangorei* or *corymbosus*, and chiefly exported from Bengal.

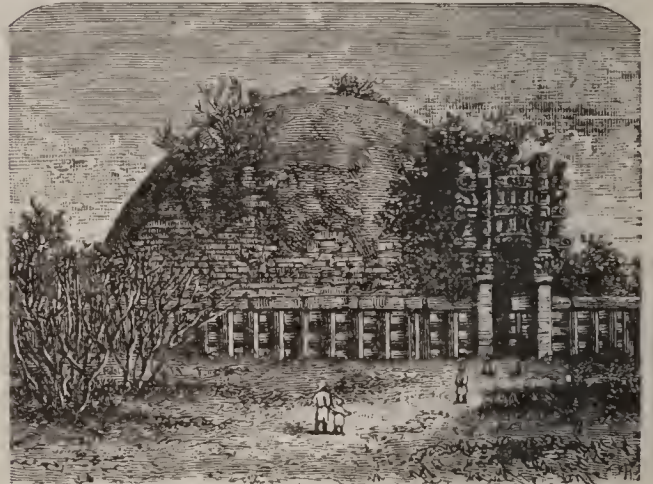
Indian'a, one of the United States, bounded by Michigan lake and state, Ohio, Kentucky, and Illinois. It is almost one continued plain, with the exception of the hills of the Ohio River and Wabash valleys, which rise from 200 to 600 feet above the sea-level. The western side of the state, north of the Wabash, is mostly prairie-land interspersed with lakes, woodlands, and swamps. The eastern part was originally thickly covered with forests, which, however, are rapidly disappearing before the settler. Indian corn, wheat, oats, barley, tobacco, and potatoes are the chief agricultural products. Molasses, cider, wine, honey, cheese, milk, are also plentifully produced. Immense herds of cattle and swine are reared. Between the Wabash and the Ohio there is a coal-field of nearly 7000 square miles, with coal of excellent quality, and an output which in 1889 amounted to 2,845,057 tons. Woollens, cottons, lumber, agricultural implements, manufactures of iron, paper, and leather, are leading industries. The Ohio, White River, Wabash, and the Miami are the principal rivers. A canal 467 miles in length, from Evansville to Toledo, unites the Ohio, the Wabash, and Lake Erie. The railroads have a length of more than 6000 miles. The principal towns are Indianapolis (the capital), Evansville, Fort Wayne, Terre-Haute, New Albany, Lafayette, South Bend, Madison, &c. Indiana was part of the territory ceded by the French to the British in 1763, and by the British to the United States in 1783. It was erected into a State in 1816. Pop. 1890, 2,192,404. Area of the State, 36,350 square miles.

Indianap'olis, a city of the U. States, capital of Indiana, on the White River, near the centre of the state, mostly situated on a plain. It is the centre of numerous railroads, and being surrounded by rich

agricultural and mineral regions is a place of great trade and manufactures. It is an important market for grain, live stock, timber, &c., and carries on pork-packing, the production of iron goods of various kinds, agricultural implements, woollens, flour, &c. The city is well and regularly built, the chief edifice being the new state-house. Educational and benevolent institutions are numerous, the former including a university, medical and other colleges. Pop. 105,436.

Indian Archipelago. See *Malay Archipelago*.

Indian Architecture comprehends a great variety of styles, among which we may distinguish, as the most important, the Buddhist style, the Jaina style, the Dravidian or style of Southern India, the Chalukyan style, the Modern Hindu or Indian-Saracenic style. The history of Indian architecture commences in the 3d century B.C., with the religious buildings and monuments of the Buddhists. Amongst the principal forms of **BUDDHIST ARCHITECTURE** are the following:—First, the



Buddhist Great Tope at Sanchi, Central India.

topes, *stupas*, or towers built to mark some sacred spot, and the *Dagobas*, constructions of a similar nature, containing relics of Buddha or Buddhist saints. These buildings generally consisted of a circular stone basement, varying from 10 or 12 to 40 feet in height, and from 40 to 120 feet in diameter, on which rose a rounded domical structure, generally of brick or small stones laid in mud, the whole edifice rising sometimes 50, sometimes 100 feet high. (See *Dagoba*, *Tope*.) Second, the rock-cut *chaitya* halls or churches, and the *viharas* or monasteries. Most of these are found in the Bombay Presidency; some also in Ben-

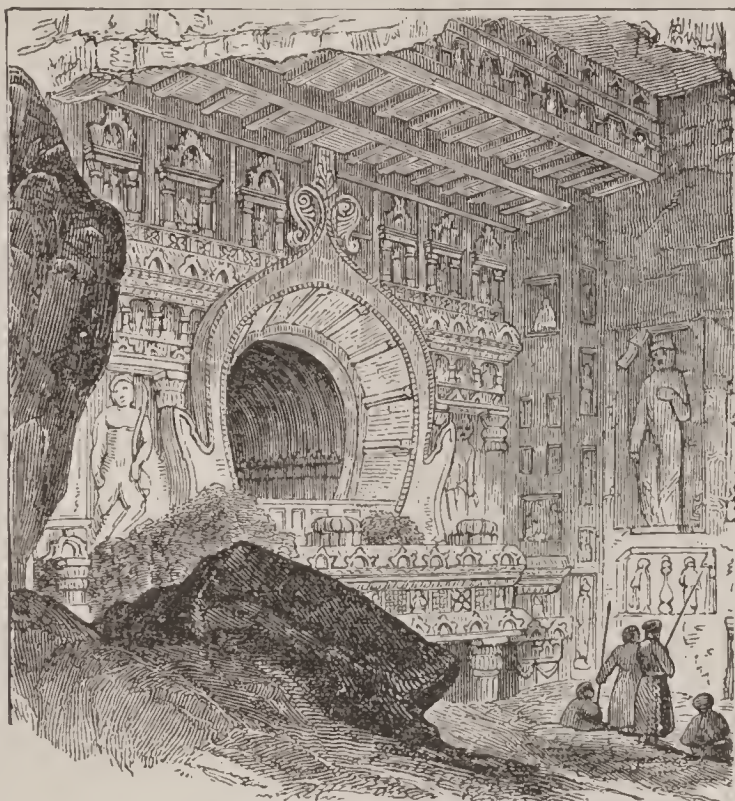
INDIAN ARCHITECTURE.

gal and Behar. In rock-cut buildings architectural skill is confined to the façade and the interior, which are generally cut out with most beautiful and perfect detail. Amongst the most notable for beauty of design are those at Ajanta, and, finest and largest of all, the great Chaitya cave at Karli, near Bombay, the date of which is probably about 80 B.C. Another interesting example is at Ellora. The JAINA STYLE is a development or corruption of the pure Buddhist. It is characterized by the square or polygonal court, the twelve-pillared dome, the slenderness and elegance of the columns, the horizontal arch, the *sikras* or towers surmounting the cells containing the images, and, lastly, by the peculiar grouping of many temples together on hilltops. Prominent examples of Jaina architecture are found at Girnar in Gujar at; and at Mount Abu, of the Aravulli range. The DRAVIDIAN STYLE is that of the peoples of Southern India. Its most flourishing epoch comprises the 16th, 17th, and even 18th centuries of our era. To this late period belong the great temples at Tanjore, Tiruvalur, &c. The distinctive parts of a

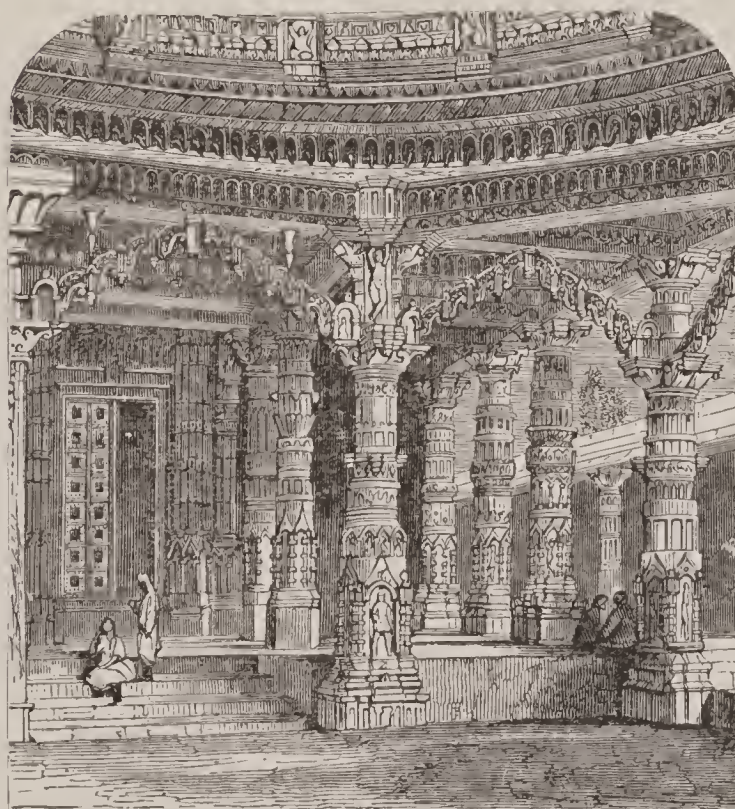
Dravidian temple are the *vimana* or temple proper, with storied pyramidal roof; the *man-*

tapas or porches, covering the door which leads to the cell; the *gopuras* or gate-pyramids, in the quadrangular inclosures surrounding the *vimanas*; the *choultries* or pillared halls, used for various purposes. The general characteristics of a Dravidian temple of the first class are the storied pyramidal towers, the hall of 1000 columns, the bold cornice with double flexure, the detached shafts, the richly-carved stylobate, and the

large tanks with flights of stone steps. The CHALUKYAN STYLE, so named from a dynasty which rose in the 6th century, in what is now Mysore and the Nizam's Territory, reached its perfection in Mysore from 11th to 14th centuries. The characteristic features are the open porch, the straight-lined, conical-shaped tower, the star-shaped temple, and the basement terrace of stone. The INDIAN-SARACENIC STYLE is a general name for a number of somewhat varying styles, the result of the mixture of Sara-



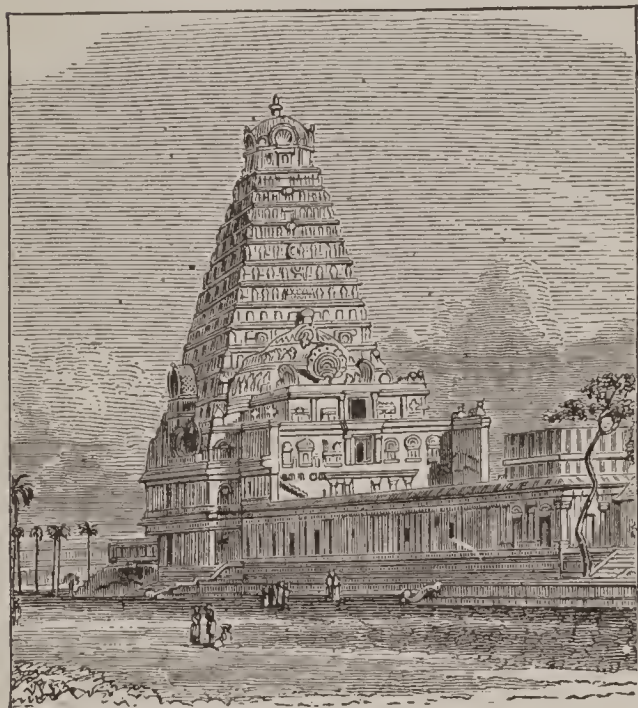
Exterior of the Chaitya Cave, Ajanta—Buddhist style.



Vimala Sah Jain Temple, Mount Abu—Jaina style.

cenic principles of architecture, brought with them by the Mohammedan conquerors of

India, and the distinctive architectural features of the different localities where they settled. Under the Mogul emperors in the 16th century were erected some most magnificent buildings, such as the tomb of Humayun Shah at Old Delhi; that of Akbar



The Great Pagoda, Tanjore.—Dravidian style.

at Secundra (see *Akbar*); the palaces of Shah Jehan at Agra and Delhi; and the Taj Mahal, built by the same monarch at Agra. The Moslem architecture of India contrasts with the native Indian styles in its use of the radiating arch, in the superior simplicity and grandeur of its style—its flat ornamentation not interfering with the lines of true architectural construction. A characteristic feature also is its fine conventionalism of vegetable forms for decoration and tracery. See *Saracenic Architecture*.

Indian-bay, *Laurus indica*. See *Laurel*.

Indian-berry, *Cocculus indicus*. See *Cocculus*.

Indian-cedar. See *Deodar*.

Indian Civil Service includes the civil and judicial administration, the medical service, the forest department, and officers of the staff corps in civil employ. Candidates must be between seventeen and nineteen years of age, and gain their appointment by passing an examination held once a year in London, after which they are required to undergo two years' probation, and to pass during that time periodical examinations in special subjects of study before proceeding to India. After his arrival in India the candidate must within a given time choose whether

he will enter the executive or the judicial branch of the service. He commences with a salary of 4800 rupees a year and may attain in the one department a lieutenant-governorship, and in the other a judgeship of the High Court.

Indian Corn. See *Maize*.

Indian Fig, a name given to the *Opuntia Tuna* and *O. ficus-indica*, and other species of the Cactus family common in the tropical and sub-tropical countries of America, and now naturalized in Africa, Asia, and Southern Europe. They are generally from 10 to 12 feet high. Their fruit, which is egg-shaped and from 2 to 3 inches long, is cooling and wholesome, and yields a juice used for colouring confectionery. The wood of the stems becomes very hard with age.

Indian Hemp, same as *Canada Hemp* (which see).

Indian Ink, a practically indelible writing ink of which there are two principal kinds—one prepared in Italy, Turkey, and Asia from certain cuttle-fishes, the other in China by mixing fine lamp-black with glue or size and a little camphor. The former when submitted to the action of an alkali becomes brown sepia.

Indian Mutiny. See *India (History)*.

Indian Oak, a popular name for the teak-tree (which see).

Indian Ocean, that great body of water which has Asia on the north, the Sunda Isles and Australia on the east, Africa on the west, and the Antarctic Ocean on the south. The Cape of Good Hope and the southern extremity of Tasmania may be considered its extreme southern limits on the west and east. Its length from north to south somewhat exceeds 6500 miles, its breadth varies from 6000 to 4000 miles. It is traversed by the equatorial current flowing east to west, and its navigation by sailing vessels is more or less modified by the periodic trade-winds and monsoons. Its greatest known depth is 3080 fathoms.

Indian Paper, a paper made from the bark of *Daphne cannabina*, native to India, China, and Japan. It is generally used in India on account of its toughness, durability, and exemption from the attacks of insects.

Indians, AMERICAN, the collective name given to the tribes inhabiting the continent at the time of the discovery by Columbus, and to such of their descendants as still survive. The name of Indians was first given to these races from the notion that the newly-discovered continent formed part of

India. The Esquimaux or Innuits, the most northerly of these tribes, extend across the continent along the Polar Sea. Next below them are the allied Kenai and Athabascan groups, the former represented chiefly by the Yellow Knife or Atna tribe on the Yukon River. The Athabascans are chiefly found between Hudson's Bay and the Rocky Mountains, but include besides the Chipeways, Coppermine, Dogrib, and Beaver Indians; the Tlatskanai, Unkwa, and Hoopah Indians of the Oregon coast; the Navaho tribe of the Highlands of New Mexico; the Apaches, ranging from the western Colorado to Chihuahua and Coahuila; and the Lipani, north of the mouth of the Rio Grande del Norte. Canada and the United States east of the Mississippi were formerly inhabited by the Algonquin-Lenappe and the Iroquois, generally at war with each other. The extreme west of the Algonquin region was occupied by the Blackfeet Indians; the Ojibeways held the shores of Lake Superior; south and west of Hudson's Bay were the Crees. The Leni-Lenappe section of the Algonquin-Lenappe group comprised the five nations of the Delawares, including the Mohicans. The Iroquois included the Senecas, Cayugas, Onondagas, Oneidas, and Mohawks, who formed a league of five nations, afterwards joined by the Tuscaroras. The Hurons were of the Iroquois group. The Dacotah or Sioux group occupied the plains between the Rocky Mountains and the Mississippi as far south as Arkansas, and included the Assiniboinis, Winnepegs, Iowas, Omahas, Osages, Kansas, Arkansas, Menitares, Crows, and Mandans. West of the Mississippi also were the Pawnees and Riccaras about the Nebraska or Platte River, and to the south-east were the Choctaws and Chickasaws. In the Rocky Mountain regions were the Shoshone or Snake Indians, including the Comanches and others. The Cherokee tribes, which inhabited South and North Carolina, formed a detached group, and the Texas Indians were comprised in many small and diverse tribes. Below these, in New Mexico, a more advanced and distinct family is found called Moquis or Pueblo Indians. Of the numerous families occupying Mexico the Nahuatls or Aztecs were the most powerful and civilized. The Otomis, speaking a peculiar language, were also a numerous people in Mexico. In Central America the predominating family was the Maya, including the Quichés, Kachiquels, &c. Portions of the Aztec tribes were

also found in Central America. In South America the leading and more advanced families were those that made up the Peruvian Empire, among which the Inca race and the Aymaras were the chief. The Araucanians, to the south of these, in Chili, had a considerable resemblance to the Algonquins and Iroquois of North America. The remaining portions of the continent, including the great alluvial tracts of the Atlantic slope, were principally occupied by the Guaranis; but along its northern coast were found the Caribs, who spread also over the Antilles and most of the West Indian Islands. In the extreme southern part of the continent live the tall Patagonians or Tehuelches, and squalid families in some respects resembling the more debased Australians.

By some ethnologists the American Indians are considered an aboriginal and single stock; by others a mixture of Mongolian, Polynesian, and Caucasian types; and by others as derived from the grafting of Old World races on a true American race. They are generally characterized as having long, black, and straight hair, scanty beard, heavy brows, receding forehead, dull and sleepy eyes, a salient and dilated nose, full and compressed lips, and the face broad across the cheeks, which are prominent, but less angular than in the Mongolian. The facial angle is about 75° (about 5° less than the European average); the hands and feet are small and well proportioned. The complexion varies from dark-brown to almost white; a somewhat reddish tint is common. The North American Indian is described as of haughty demeanour, taciturn and stoical; cunning, brave, and often ferocious in war; his temperament poetic and imaginative, and his simple eloquence of great dignity and beauty. The Mexico-Peruvians worshipped the sun with human sacrifices and the grossest rites. Those of the United States and Canada believe in the two antagonistic principles of good and evil, and have a general belief in manitous, or spiritual beings, one of them being spoken of as the *Gitche Manitou*, or Great Spirit. They believe in the transmigration of the soul into other men and into animals, and in demons, witchcraft, and magic. They believe in life after death, where the spirit is surrounded with the pleasures of the 'happy hunting grounds,' though they have no idea that the acts of their present life can have any connection with their future happiness. They adopt a *totem* or symbol of the name of the progeni-

tor of the family; this is generally some animal (the turtle, bear, and wolf being favourites), which is the mark of families even when expanded into tribes. No marriage rite is necessary beyond the consent of the parties and their parents; but the wife may be dismissed for trifling causes, and polygamy is allowed. In ancient times the body was covered with furs and skins according to the seasons, but now the white man's clothes and blanket have generally superseded the native dress; though the moccasin of deer or moose hide, and in the wilder tribes the ornamental leggings and head-dresses, are largely retained. Their dwellings are made of bark, skins, and mattings of their own making, stretched on poles fixed in the ground. Their arms consist of the bow and arrow, the spear, tomahawk, and club, to which have been added the gun and knife of the whites. Canoes are made of logs hollowed out, or of birch bark stretched over a light frame, skilfully fastened with deers' sinews, and rendered water-tight by pitch. The antiquities found in Mexico and Peru, and the ruins of elaborate buildings in Central America, prove that the semi-civilized races there existing had made considerable progress in sculpture and architecture. The number of Indians in the British possessions is about 130,000, in the United States, 1890, 249,273, in Central America 1,500,000, and in Mexico 4,000,000, in all North America somewhere about 6,000,000. In South America their number is probably about 10,000,000, many of them being more or less civilized and professing Christianity.

Indian Shot (*Canna indica*), an ornamental plant of the Arrow-root family found in most tropical countries. The seeds are round, hard, and black, hence the name of Indian shot applied to the plant.

Indian Summer, the name given to a period of mild summer weather which generally occurs towards the end of autumn in North America.

Indian Territory, a tract of country in the United States allotted for the residence of certain of the Indian tribes who were partly removed from the south-east states of the Union. It is bounded mainly by Kansas, Texas, and Arkansas, the southern boundary being formed by the Red River; area, 31,400 sq. miles. The chief rivers are the Arkansas and its tributaries (Cimarron, Canadian River, &c.) and the Red River and its tributaries. The eastern portion is generally fertile, the north-west barren.

The tribes among which this territory has been apportioned include the Cherokees, Creeks, Seminoles, Choctaws, and Chickasaws, all of whom have made considerable advances in civilization, having schools, churches, a few newspapers, &c. Other Indians also inhabiting the Indian Territory are the Arapahoes, Kiowas, Cheyennes, Comanches, Osages, &c. The civilized Indians of the territory have not yet been made citizens of the republic, though they are subject to the revenue laws and pay taxes. The Indian population, 1890, 60,773. In 1889 Oklahoma, a tract of 39,000 sq. miles near the centre of the Indian Territory, was thrown open for settlement by the government, having been given up by the Indians. Pop. of Indian Territory, 61,834.

Indian Yellow, or PUREE, a pigment of a bright yellow colour, but not permanent; used in water-colour painting. It is composed of the phosphate of urea and lime, and is imported from India.

India-rubber, a peculiar elastic substance composed of carbon and hydrogen, found in suspension in the milky juice of many different families of plants. (See *Caoutchouc*.) The crude rubber is usually prepared where the juice is collected, by drying the juice over a fire or in the sun on moulds of clay, paddles, or lasts; by evaporating the juice in the sun and removing the successive pellicles formed on the surface; or by coagulating the juice, as in Nicaragua, by an application of the juice of the bejuca vine, and kneading and rolling the coagulated mass. Most of the rubber of commerce is derived from South America, from Pará, Central America, Mexico, Carthagena, &c.; smaller quantities from Java, Penang, Singapore, Assam, and S. Africa. The purest comes from Pará in large bottles and thick plates. Prior to the introduction of rubber into Europe in the early part of the 18th century it had already been turned to various domestic and industrial uses, such as the making of bottles, syringes, boots, and waterproofing, by the natives and residents along the banks of the Amazon. In Europe the first important practical applications of it are associated with the names of Mackintosh, the patentee in 1823 of a waterproofing process by the solution of the gum in oil of turpentine and alcohol, and in coal-tar naphtha; Hancock, the inventor of the 'masticator,' a machine for the condensation of crude lumps or shreds of caoutchouc, as imported, into compact homogeneous blocks for subsequent division

into cakes, sheets, rollers, &c.; and Good-year, the inventor of the vulcanizing process, patented in 1844. Since then its uses have multiplied so rapidly that it is employed in every department of industry. Thus apart from its use in blocks and sheets, &c., in tapes or threads for weaving into elastic tissues, and as varnish for waterproofing, it is employed, in combination with other resinous materials in a solvent such as naphtha, as a cement or marine glue. When combined with a small quantity of sulphur, &c., it is used for the manufacture of overshoes, boots, gloves, life-preservers, gas-bags, steam and water packing, belting, fire-hose, tubing, springs, tires, artificial sponges, &c. With a larger proportion of sulphur, and cured or vulcanized by exposure to a high temperature, it is used for the manufacture of combs, pen and pencil holders, rulers, inkstands, buttons, canes, syringes, jewelry, and, when coloured with vermilion, for mountings for artificial teeth, &c. In combination with asphalts, oils, and sulphur, &c., and vulcanized (*kerite*) it is used for covering telegraph wires.

Indic'ative, that mood of the verb in which something is said positively; hence it has also been called the positive mood, as distinguished from the subjunctive and potential.

In'dicator, (1) an instrument for ascertaining and recording the pressure of steam in the cylinder of a steam-engine, in contradistinction to the steam-gauge, which shows the pressure of the steam in the boiler. (2) An apparatus or appliance in a telegraph for giving signals or on which messages are recorded, as the dial and index hand of the alphabetic telegraph. (3) A genus of African birds, the honey-guides or honey-guide cuckoos. See *Honey-guide*.

Indic Languages, the class of Indo-European (Aryan) languages comprising the dialects at present spoken in India, as Hindi, Hindustani, Mahratti, Bengali, and the dead languages Prakrit, Pali, and Sanskrit.

Indiction, in chronology, a period or cycle of fifteen years, supposed to relate to some judicial acts, probably the publication of tariffs of the taxes which took place at stated intervals under the Greek emperors. Three sorts of indiction are mentioned:— (1) the Cæsarean, which fell on the 8th of the calends of October, or 24th of September; (2) the indiction of Constantinople (beginning A.D. 312), on the 1st of September; and (3) the pontifical or Roman, which

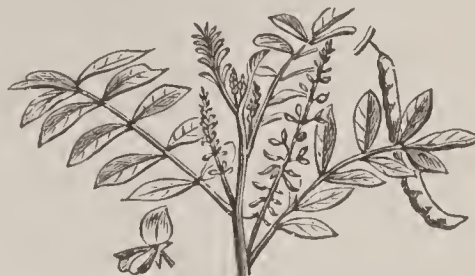
begins on the calends of January. We find ancient charters in England dated by indictions.

Indictment (in-dit'ment), in law, a written accusation of one or more persons for a crime or misdemeanour, preferred to and presented upon oath by a grand-jury to a court. Indictments must have a precise and sufficient certainty.

Indigestion. See *Dyspepsia*.

Indigirka, a river of Eastern Siberia, flowing northwards into the Arctic Ocean; length 750 miles.

In'digo, a blue vegetable dye, extensively employed in dyeing and calico-printing; an important commercial product in the East and West Indies, Mexico, Brazil, Egypt, &c. It is chiefly obtained from various leguminous plants of the genus *Indigofëra*, herbaceous or shrubby plants, with pinnate leaves,



Indigo-plant (*Indigofera tinctoria*).

and small, blue, purple, or white pea-shaped flowers disposed in axillary racemes. They are very numerous in the equatorial regions of the globe. The species most commonly cultivated are the *I. Anil*, a native of Tropical America, but now cultivated also in the East Indies; the *I. tinctoria*, also cultivated in both Indies; and the *I. cærulea*. The *I. tinctoria* is the species most abundantly cultivated. The greater part of the indigo used at the present day comes from India, especially from the provinces of Bengal, Oude, and Madras. The ground is ploughed towards the end of the year, and the seed sowed in the early spring of the following year. The first cutting of the plants takes place about midsummer, and the second about two months later, the process of extracting the dye varying as the leaves are fresh or dried. Indigo occurs in the market in pieces which are sometimes cubical, sometimes of an irregular form; these pieces are easily broken, the fracture being dull and earthy. The colour varies from light-blue to blackish-blue; when rubbed with the nail a copper-coloured streak is formed on the surface of the mass. Indigo is insoluble in water,

but when exposed to the action of certain deoxidizing agents it becomes soluble in alkaline solutions, losing its blue colour and forming a green solution from which it is precipitated by acids white, but it instantly becomes blue on exposure to the air. Commercial indigo contains about 50 to 60 per cent of pure indigo blue, the remainder consisting of substances called indigo gluten, indigo yellow, indigo red, &c.

Indigo-bird, a North American bird (*Cyanospiza cyanea*) of the Finch family. It is of a deep-blue colour, and is a good songster.

Indigo-copper, the native protosulphide of copper, of an indigo-blue colour.

Indigofera, a large genus of plants, natural order Leguminosæ, including about 220 species, indigenous in the warmer parts of Asia, Africa, and America. See *Indigo*.

Indigometer, an instrument for ascertaining the strength of indigo.

Indium, a metal discovered by Reich and Richter in 1863 by means of spectroscopic analysis in the zinc-blende of Freiburg. It has been isolated in small quantities, and is of a silver-white colour, soft, and marks paper like lead; specific gravity, 7.421 at 16°.8. The metal is related to cadmium and zinc, and its spectrum exhibits two characteristic lines, one violet and another blue.

Indo-China, a name sometimes given to the south-eastern peninsula of Asia, comprising Burmah, Siam, Cambodia, Cochin-China, Tonquin, Anam, &c.

Indo-European Languages, also called ARYAN or INDO-GERMANIC, the most important of the great families into which human speech has been divided, spoken by various peoples in Asia and Europe. The chief branches of this family are the Teutonic or Germanic, including English, German, Dutch, Danish, Swedish, Icelandic, and the extinct Gothic; the Slavonic (Polish, Russian, Bohemian); the Lithuanian; the Celtic (Welsh, Irish, Gaelic, Breton); the Latin or Italic, and the Romance tongues descended from it (French, Italian, Spanish, Portuguese); the Greek, the Armenian, the Persian, and the Sanskrit. All these tongues are regarded as being descended from a common ancestral tongue or parent speech, spoken at some remote period in Central Asia, whence the ancestors of the modern peoples speaking these tongues spread into India, Western Asia, and Europe. See *Philology*.

Indore, or INDOR, a protected native state of Hindustan, connected with Central India, and consisting of several detached portions, the largest being bisected by the Narbada; total area, 8400 sq. miles. It forms the remnant of the sovereignty of the Mahratta dynasty of Holkar, and Holkar as the family name is associated with the title Maharajah, which belongs to the ruler of the state. It is traversed by the Vindhya Mountains, and much of the country is well wooded. Indore is generally fertile, the cultivated crops including wheat, rice, millet, cotton, sugar-cane, oil-seeds, tobacco, and opium, which is one of the principal products. Amongst the inhabitants are numerous Bheels. The ruling class are Mahrattas. The Holkar dynasty was founded by Mulhar Rao in the early half of last century. Their dominions were at one period much more extended than at present. Pop. 1,054,237.—INDORE, the capital, is of modern origin, and in recent times has rapidly increased. The Maharajah's palace is the most conspicuous edifice. The British residency is one of the handsomest in Hindustan. Pop. 75,401.

Indorsement, or ENDORSEMENT. See *Bill*.

Indra, a Hindu deity, originally representing the sky or heavens, and worshipped in the Vedic period as the supreme god,



Indra.—Coleman's Hindu Mythology.

though he afterwards assumed a subordinate place in the Pantheon. He is commonly represented with four arms and hands riding on an elephant. When painted he is covered with eyes. He is at once beneficent as giving rain and shade, and awful and powerful in the storm as wielding the thunderbolt. In one aspect he is lord of *Swarga*,

the beautiful paradise where the inferior gods and pious men dwell in full and uninterrupted sensuous felicity.

Indre (andr), a department of Central France; area, 2622 square miles. It belongs to the basin of the Loire, which receives its waters by the Indre, a river of 140 miles length, the Creuse, and the Cher. The department is generally flat, and nearly two-thirds of the surface is arable. Large crops of wheat and barley are produced; other important crops are hemp and flax. A considerable quantity of land is occupied by vineyards. The minerals include iron, lithographic stones, and several varieties of marble. The principal manufactures are fine woollen cloth, and iron and steel goods, linen, hosiery, &c. Châteauroux is the capital. Pop. 1891, 292,868.

Indre-et-Loire (andr-è-lwâr), a department of Central France; area, 2362 square miles. It belongs to the basin of the Loire, and is traversed both by it and its tributary the Indre, as also by the still more important tributaries the Vienne and the Creuse, besides the Cher. They are all navigable within the department, and furnish it with almost unlimited means of water communication. The surface is finely diversified, and more than one-half is arable. Hemp and flax are extensively cultivated, and fruit is very abundant. Iron is worked to some extent; and there are valuable millstone quarries. Clay, both for ordinary purposes and the finer kinds of pottery, is abundant. The manufactures are not of much importance. Tours is the capital. Pop. 340,921.

Induced Current, the current of electricity which is produced or excited in a conductor when the magnetic field in which it is placed is altered in any way; that is, 1st, when the strength of the current in a neighbouring conductor is altered; or 2d, when a neighbouring conductor in which a current flows is altered in position; or 3d, when a neighbouring magnet is moved; or 4th, when the magnetization of a neighbouring magnet is altered. Thus if there is a closed circuit, say a coil of wire with its ends joined, through which no current is passing, the motion of a magnet in its neighbourhood will induce a current in it, the direction of this current being always such as to oppose the motion.

Induction, in logic, is that process of reasoning by which we rise from the particular to the general, and is the counter-process to deduction. In induction parti-

culars are not only raised into generals, but these into still higher generalities. In following this method we proceed from the known to the unknown, and obtain a conclusion much wider than the premises. Thus a person who has had any experience easily arrives by induction at the conclusion that fire burns wood, and when any piece of wood whatever is presented to him he will have no hesitation in saying that fire will burn it. As it is impossible that all particulars can be observed, there is always a certain risk of error, and the inductive method must be worked with extreme caution; but science properly so called would be impossible if we did not presuppose a faculty of arriving from experience at the knowledge of truths not contained in that experience. Hence the ground of induction is the established fact that nature is uniform.

Induction, in English ecclesiastical law, the investing of a clerk presented to a benefice with the temporalities thereof. The person inducting takes the clerk by the hand, and lays it on the ring, key, or latch of the church-door or wall of the church; or he delivers a clod, turf, or twig of the glebe, and thus gives corporal possession of the church. The doors are then opened, the clerk put into the church, and the bell tolled to make the induction known. The incumbent must assent to the Thirty-nine Articles and the Book of Common Prayer, and take the oath of allegiance. In Scotland the minister is inducted by the presbytery.

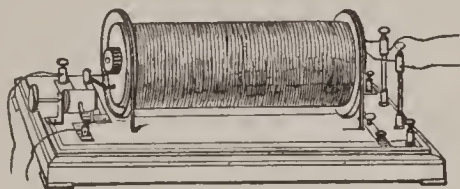
Induction, ELECTROMAGNETIC, the action by which a current of electricity is produced in a conductor when the magnetic field in which it is placed is altered in any way. See *Induced Current*.

Induction, ELECTROSTATIC, the action by which the distribution of a charge of electricity on a conductor is altered by the approach of an electrified body. When a body charged with one kind of electricity is approached towards an insulated conductor which originally had no charge, a charge similar to that of the influencing body is produced on the remote side, and an equal charge of the opposite kind on the near side of the insulated conductor. It is to the mutual induction between the two coatings, one charged positively and the other negatively, that the Leyden-jar is indebted for its large electrical capacity.

Induction, MAGNETIC, the action by which iron and other substances become magnetic

when in a magnetic field, that is, when in the neighbourhood of magnets or currents of electricity. See *Electro-magnetism, Magnetism*.

Induction-coil, an instrument invented by Ruhmkorff, in which rapid breaking and making of the current of electricity in a



Induction-coil.

primary short coil of wire gives rise to a succession of induced currents (see *Induced Current*) of very great electromotive force in a long secondary coil. In the figure the secondary coil is the one shown wound up in a cylindrical form. Such a coil often consists of a copper wire many miles in length, and a succession of powerful sparks passes between its terminals when the primary current is rapidly made and broken.

Indulgence, in the Roman Catholic system, is the remission granted by the church to a repentant sinner of the temporal punishment due to his sin, whether this punishment be the pains of purgatory, or penance which the church has the right to impose according to the gravity of the sin. It must be understood that the indulgence is never to be considered as constituting a remission of the sin itself. The principle of indulgences rests on that of good works. Many saints and pious men have done more good works and suffered more than was required for the remission of their sins; these are known as *works of supererogation*, and the sum of this surplus constitutes a treasure for the church, of which the pope has the keys, and is authorized to distribute as much or little as he pleases in exchange for pious works or gifts. Indulgences are of two kinds: *plenary*, when considered an equivalent substitute for all penance; and *partial*, when only a portion of penitential works is relaxed. *Local* indulgences are attached to particular places, *real* indulgences to crucifixes, medals, &c. The historical origin of indulgences is traced to the public penances and the canonical punishments which the early Christian church imposed on offenders, especially on those who were guilty of any grievous crime, such as apostasy, murder, and adultery. When ecclesiastical discipline became milder it was allowed to commute

these punishments into fines for the benefit of the church. The first recorded instance of the use of the name indulgence was by Alexander II. in the 11th century, but the institution itself was in full development during the Crusades. At first the only source of indulgences was in Rome, and they could be obtained only by going there. The abuse of the system of granting indulgences inflamed the zeal of Luther, and the Protestant theologians have always found indulgences one of the most vulnerable points of the Roman Catholic system.

Indus, the chief river of the north-west of Hindustan. It has a length of about 1800 miles, drains an area of about 370,000 square miles, and rises in Tibet on the north of the Himálaya Mountains. At first it flows in a north-westerly direction, but after bursting through the Himálayas flows south-west till it enters the Indian Ocean. At Attock it is joined by the Kabul from Afghanistan, and here, 950 feet above the sea, it is nearly 800 feet wide, and from 30 to 60 feet deep according to the season. Near Mittankot it receives on the east the Panjnad, or united stream of the 'Five Rivers' of the Punjab. In Sind it gives off several extensive arms or canals, which are of great value for irrigation; and below Haidarabad it divides into a number of mouths. Its delta extends about 130 miles along the coast. Vessels drawing more than 7 feet cannot generally enter any of its mouths; but steamers of light draught ascend from Haidarabad to Multan.

Industrial and Provident Societies, societies that carry on some trade for the mutual benefit of the members. In Great Britain various acts have been passed for the regulation of such societies, the most important being in 1876, amending and consolidating all previous acts. The societies which may be registered under this act are societies for carrying on any labour, trade, or handicraft, whether wholesale or retail, of which societies no member other than a society registered under this act shall have or claim an interest in the funds over £200. No society can be registered which has a membership of less than seven persons; and every society must have a registered office; must publish its name outside the office and elsewhere; must submit its accounts to an annual public audit; must send annual returns to the registrar, &c. A register of the members' names must be properly kept. The registrar, on applica-

INDUSTRIAL EXHIBITION — INFANT.

tion of one-fifth of the members, may, with the consent of the treasury, appoint one or more inspectors to examine into the affairs of the society and report thereon.

Industrial Exhibition. See *Exhibition*.

Industrial Schools are schools or institutions in Britain devoted to the partial upbringing of vagrant, disorderly, and destitute children, and to which they may be sent by order of a magistrate. The boys are taught shoemaking, tailoring, brush and box making, firewood cutting, &c. The girls learn sewing, shaping, knitting, and netting. By an act passed in 1866 any child under the age of fourteen found begging or receiving alms, and not having any home or proper guardianship, or having a surviving parent undergoing penal servitude or imprisonment, or frequenting the company of reputed thieves, may be sent to a certified industrial school. Children under twelve, charged with offences punishable with imprisonment, but who have not been previously convicted of felony, may also be dealt with in a similar way under the act.

Industrial Villages, villages proposed to be established by English philanthropists for the improvement of the condition of the working people of the country, and for preventing their continual influx into towns, as well as to enable the working population of towns to leave these and to obtain better and healthier dwellings, and to live their lives and bring up their families in improved conditions, moral as well as physical. The inhabitants of such villages would be peasant proprietors, allotment holders, persons engaged in co-operative farming, persons employed in various handicrafts, &c., and the handicrafts might either be self-supporting and flourish by themselves, or might be partly supplementary to the tillage of the soil.

Inebri'ety, habitual or chronic drunkenness. See *Drunkenness*, *Delirium Tremens*, *Intoxication*, *Dipsomania*.

Inertia, or VIS INERTIÆ (Lat. the 'power of inactivity'), the passiveness of matter, or its indifference to rest or motion. Newton's first law treats of this property, in virtue of which a body at rest will remain at rest, and a body in motion will continue to move in a straight line and with a uniform velocity unless some force acts upon it.

Inez de Castro. See *Castro*.

Infallibility, exemption from the possibility of error in regard to matters of religion and morals—a claim made by the Ro-

man Catholic Church both on its own behalf and on that of the pope when speaking *ex cathedrâ*, or in his official capacity. The infallibility of the church is of two kinds, *active* and *passive*; the former signifying the function of the church of permanently teaching the truths of God, and of authoritatively settling doctrinal disputes; and the latter that property inherent in the church in virtue of which she can never receive or embrace erroneous doctrine. The infallibility of the pope, long taught, was only settled as an article of faith in the Vatican Council of 1870. The dogma was then formulated in the following terms:—'We teach and define that it is a dogma divinely revealed; that the Roman pontiff, when he speaks *ex cathedrâ*—that is, when in discharge of the office of pastor and doctor of all Christians, by virtue of his supreme apostolic authority, he defines a doctrine regarding faith or morals to be held by the universal church, by the divine assistance promised to him in blessed Peter—is possessed of that infallibility with which the Divine Redeemer willed that his church should be endowed for defining doctrines regarding faith or morals, and that, therefore, such definitions of the Roman pontiff are irreformable of themselves, and not from the consent of the church.' A considerable body who refuse to accept the infallibility of the pope as one of the dogmas of the church, have formed themselves into a separate church, calling themselves Old Catholics. See *Old Catholics*.

Infamous Behaviour, and its penalty, DISCHARGE WITH INFAMY, are terms of the military and naval codes applied to conduct not only subversive of discipline, but so inherently disgraceful as to exclude the perpetrator from reputable society.

Infant, a term in the English and American law for persons who have not attained their *majority*, that is, the age of twenty-one years, and are under guardianship. In general, contracts made by infants are not binding, except for necessities suited to their state in life. Being an infant is no bar to criminal proceedings; but young persons are not punished for offences if they have not knowledge and discretion to distinguish them to be such. Infants require the consent of parents or guardians to marry. The jurisdiction in respect to infants is generally vested in either probate or orphans' courts. These courts appoint guardians to take charge of the property of infants, and, in case of the decease of the father, to take charge

of their persons; but during the life of the father he has the guardianship and control of the persons of his children until they are twenty-one years of age.

Infante (in-fân'tā), or **INFANT** (from Lat. *infans*, child), the title given in Spain and Portugal to the princes of the royal house. The princesses are called *infanta*.

Infan'ticide, the murder of an infant, a crime that is especially common in the case of illegitimate children, the main cause being shame; but infanticide is sometimes the result of puerperal insanity. In trial for infanticide it must be proved that the child was fully born alive. Infanticide was prevalent in Greece and Rome. In modern times many barbarous nations are guilty of wholesale child-murder. Among the South Sea Islanders and aboriginal Australians the destruction of infant life is systematized. The Hindus destroy female children without compunction, and abortion is common among the Mohammedans. In China, also, infanticide is supposed to be frightfully common.

In'fantry, foot-soldiers collectively. Except among semi-barbarous nations, and during the prevalence of the institutions of chivalry, infantry has always been considered the most important military arm, and this has been peculiarly the case since the formation of standing armies, and since war has become a science. Infantry may be divided into various classes, and most commonly into light infantry and infantry of the line. The light infantry is particularly intended to serve in the outposts, to act as sharpshooters, and to harass and annoy the enemy. Under equal circumstances well-trained infantry is almost universally successful against any other kind of troops.

Infant Schools, schools, the object of which is to amuse, interest, and instruct children from their third to their sixth year. Jean Frédéric Oberlin, Protestant pastor of Waldbach, in Alsace, is regarded as their founder. In 1812 Robert Owen established one at New Lanark, in Scotland, the first attempt of the kind in Great Britain. A second was set on foot in Westminster in 1819, of which Samuel Wilderspin (1792–1866) was one of the first teachers. In England infant schools are more popular, and proportionally more numerous, than in Scotland. In Germany there are numerous *Kleinkinderschulen*, or *Kindergärten*; in France, under the name of 'Asylums,' they are wide-spread; and the *Kindergärten* sys-

tem (founded about 1840) is acquiring high credit both in Great Britain and in the United States. In dealing with infants of tender years a frequent mistake of teachers is to attempt too much. Physical more than intellectual development should be aimed at; the moral faculties should be trained by an enlightened, judicious, and sympathetic teacher. The school should be a playground, and elementary instruction should be simple, pleasing, and as much as possible imparted by means of models, pictures, and simultaneous singing.

Infection, a term sometimes used to signify the communication of disease through the atmosphere, as contrasted with *contagion* (*con*, and *tango*, to touch), communication of disease through the medium of touch. In many cases Infection and Contagion are used as synonymous.

Infectious Diseases. See *Contagion*.

Infest'ment, in Scots law, a term used to denote the act of giving symbolical possession of heritable property, the legal evidence of which is an instrument of sasine.

Inferior Planet, a planet whose orbit lies within that of the earth. Mercury and Venus are the inferior planets.

In'finite, a term in metaphysics, which has been the source of much controversy. Some maintain that there corresponds to infinity a distinct notion; while others affirm that the word is a name for a mere negative, that we can never really form any distinct idea of the infinite.

Infinites'imal, in mathematics, an infinitely small quantity, or one which is so small as to be incomparable with any finite quantity whatever, or which is less than any assignable quantity. The *infinitesimal calculus* is a department of the higher mathematics which embraces both the *differential* and the *integral calculus*.

Infin'itive, the indefinite mood of a verb, or that in which the verb is represented without a subject; the mere name-form of the verb. As the verb expresses an action, or a state, it generally belongs to a subject whose action or state is expressed; but if we wish to express the mere idea of this action or state we use the infinitive, which, therefore, in many languages is employed without further change as a substantive—for instance, in Greek and German—only preceded by the neuter article. The infinitive may be regarded as the point of transition from a verb to a substantive, and is often used as the subject of a proposition.

Infirmary. See *Hospital*.

Inflamma'tion, a vague term for a morbid process, of which the most obvious phenomena are pain, swelling of the affected part, perceptible increase of heat to the patient, and redness beyond the natural degree, often followed by febrile symptoms. Inflammations may arise from external injuries, or may be brought on by morbid or poisonous matters in the system, sudden changes of temperature, &c. The three commonly described terminations of inflammation are *resolution*, *suppuration*, and *mortification* or *sloughing*. *Resolution* is that recovery from the disorder which is effected without the intervention of any disorganizing process, and when the vessels return to their normal condition on the exciting cause of the disorder being withdrawn, and this is the most favourable mode of termination. If inflammation cannot be resolved it must go on to *suppuration*, when the skin is either divided by the knife or breaks of itself, and there is an escape of a yellow cream-like fluid, after which the symptoms rapidly abate. The tendency to suppuration is marked by the pain becoming full and throbbing, while the pulse becomes more full without being less frequent. *Mortification* is accompanied by the sudden cessation of pain, and there is the actual death of the part affected. When the circumstances are favourable this dead part sloughs off by a vital process known as *ulceration*, and the cavity gradually fills up and heals. In many cases inflammation may rather be considered as a salutary process than as a disease, for it frequently prevents evils which would occasion either serious or fatal consequences. The most important remedy in cases of severe inflammation is hot fomentations, blisters, blood-letting, the warm bath, combined with low diet and perfect quietude. As to inflammation of the intestines, see *Enteritis*; of the eye, see *Iritis*; of the bowels, see *Peritonitis*; of the brain, see *Meningitis*; of the lungs, see *Pneumonia*.

Inflection (Latin, *inflexio*, a bending), in grammar, the changes in form which words undergo in consequence of standing in certain relations to other words in a sentence. These changes occur for the most part at the end of words, and the inflectional elements were all probably at first separate vocables. To inflection belong those changes which comprise cases, numbers, persons, tenses, &c. In some languages we have

positive proof of inflections being formed of words originally distinct. Thus Fr. *aimer-ai*, I shall love, the future of *aimer*, to love, is, literally and historically, I have to love, and is compounded of *aimer*, to love, and *ai*, I have, the first person present indicative of *avoir*. The same is the case in Italian and Spanish. The loss of inflections is a common feature of the Romance tongues as compared with the Latin, on which they are based, and is also a feature of English as compared with Anglo-Saxon. The result in both cases is much less freedom in the arrangement of words, but this is probably counterbalanced by greater perspicuity.

Inflores'cence, in botany, the mode of flowering of any species of plant, that is, the manner in which its blossoms are grouped together, and in some cases in



Varieties of Inflorescence.

1, Spike. 2, Amentum or Catkin. 3, Raceme. 4, Panicle. 5, Whorl. 6, Umbel—*a*, simple, *b*, compound. 7, Cyme. 8, Corymb. 9, Thyrus. 10, Head or Capitulum. 11, Fasciculus or Fascicle. 12, Spadix. 13, Anthodium.

which they successively open. The principal forms of inflorescence are the *amentum*, *corymb*, *cyme*, *head* or *capitulum*, *fascicle*, *raceme*, *panicle*, *thyrus*, *spike*, *whorl* (see those terms); *centrifugal* and *centripetal* are also terms applied to two kinds of inflorescence.

Influen'za (Italian, influence), a term used to denote an epidemic catarrh of a rather severe character, the symptoms of which are those of what is usually called a cold, with others such as lassitude and general depression, loss of sleep, feverishness, nausea,

loss of appetite, sometimes vomiting, often an inflammatory state of the throat and pharynx, bronchitis, or other complications. It is not usually fatal, the patient generally recovering in a week or ten days, but it sometimes leaves behind chronic bronchitis or consumption. It has at various times spread more rapidly and extensively than any other disorder.

In Forma Pauperis. See *Forma Pauperis*.

Information, in law, a complaint or accusation exhibited against a person for some criminal offence. It differs in no respect from an indictment, except that it is filed at the mere discretion of the proper law-officer of the government, *ex officio*, without the intervention of a grand jury. The process has not been put in motion by Congress for misdemeanour, but is common in civil prosecutions, for penalties and forfeitures. The information is usually made upon knowledge given by some other person than the officer, called the *relator*. The term also denotes a written statement made on oath before a justice of the peace previous to the issuing of a summons or complaint against a person.

Informers, in law, a person who informs or prefers an accusation against another, whom he suspects of the violation of some penal statute. When the informer is entitled to the penalty or part of the penalty, upon the conviction of an offender, he is or he is not a competent witness, according as the statute creating the penalty has or has not made him so. The early legislation in England, granting rewards to informers, gave rise to the most flagrant abuses, and police officers made a trade of seducing poor, ignorant persons to the commission of crimes, especially the issuing of counterfeit money, to gain the reward.

Infusion, a solution of some vegetable substance in hot or cold water, such as are often used for medicinal purposes. The water employed may be at boiling heat, but if the substance is itself boiled the result is a *decoction*. In preparing certain infusions cold water is preferable, as bringing out the constituent desired. The process of making an infusion is much the same as that of making tea.

Infusoria, a class of minute, mostly microscopic, animals, so named from being frequently developed in organic infusions, provisionally regarded as the highest class

of the Protozoa. They are provided with a mouth, are destitute of pseudopodia, but are furnished with vibratile cilia. Most are free-swimming, but some form colonies by budding, and are fixed to a solid object in their adult condition. The body consists of



Magnified Drop of Water, showing Infusoria, &c.

1, Volvox globator (a plant, a low form of Algae). 2, Stentor polymorphus. 3, Urceolaris scyphina. 4, Stylonychia mytilus. 5, Zoospermus Ferussaci. 6, Trichoda carinum. 7, Monas termo. 8, Pandorina morum. 9, Bursaria truncatella. 10, Vaginicola crystallina. 11, Cercaria gibba. 12, Zoospermus decumanus. 13, Amphileptus fasciola. 14, Vorticella convallaria. 15, Euptotes truncatus. 16, Trachelocerca olor.

an outer transparent cuticle, a layer of firm sarcode called the cortical layer, and a central mass of semiliquid sarcode which acts as a stomach. A nucleus, which is supposed to be an ovary, having attached to its outside a spherical particle called the nucleolus, and supposed to be a spermatid gland, is imbedded in the cortical layer. Contractions of the body are effected by sarcode fibres. The cilia, with which most are furnished, are not only organs of locomotion, but form currents by which food is carried into the mouth. Reproduction takes place variously. They are divided into three orders, Ciliata, Suctoria, and Flagellata, in accordance with the character of their cilia or contractile filaments. Many of the organisms formerly included among Infusoria are now regarded as vegetable.

Ingalls, JOHN JAMES, statesman, was born in Middleton, Mass., in 1833. He removed to Atchison, Kan., in 1858; elected to State Senate in 1862. From 1873 to 1890 was U. S. Senator, being prominent as a debater.

Ingelöw (ing'ge-lō), JEAN, English poetess, was born in 1830. In 1863 she published a volume of poems, which ran through fourteen editions in five years, and her popularity has since increased both through her prose writings and her poetry. In prose

she has written novels and tales for children, including *Mopsa the Fairy*, *Stories for Stories*, *Off the Skelligs*, *Sarah de Berenger*, *Don John*, &c.

Ingemann (ing'e-màn), BERNHARD SEVERIN, Danish poet and novelist, born in 1789. After attaining distinction by his lyric narrative and dramatic poetry he travelled in Germany, France, and Italy in 1818-19, and on his return wrote historical romances (taking Scott as his model) illustrative of the habits of his countrymen during the middle ages, some of which have been translated into English. Died in 1862.

Ingersoll, ROBT. G., lawyer, was born in Dresden, N. Y., in 1833; removed to Illinois in 1843. He has taken part in numerous noted law-suits, and is well known for speeches and publications against the Christian religion.

Inglis (ing'glz), HENRY DAVID, a miscellaneous writer, born at Edinburgh in 1795, died in London 1835. His works include *Tales of Ardennes* (1825), *Spain* in 1830, *Ireland* in 1834. Of his fictitious works his *New Gil Blas* is the best. Some of his works appeared under the pseudonym of Derwent Conway.

Ingoldsby, THOMAS. See *Barham, R.H.*

Ingolstadt (ing'ol-stât), a fortified town of Bavaria, on the Danube, 35 miles s.w. Ratisbon. It has an old and a new castle, a fine old Gothic church, a Jesuit college, an arsenal, &c.; manufactures of ordnance and gunpowder, breweries, &c. Ingolstadt had a university of some celebrity, founded in 1472, but in 1800 it was removed to Munich. Pop. 15,251.

Ingot (ing'got), a small bar of metal made of a certain form and size by casting it in moulds. The term is chiefly applied to the small masses or bars of gold and silver intended either for coining or exportation to foreign countries.

Ingres (an-gr), JEAN DOMINIQUE AUGUSTE, a French painter, born in 1781. He studied under David. About 1804 he went to Rome, where he resided for fifteen years, and after a further residence of four years in Florence he succeeded Denon in the School of Fine Arts in Paris, his fame being by this time fully established. In 1833 he succeeded Horace Vernet as director of the French Academy at Rome. In 1834 he was nominated Chevalier, and in 1845 commander of the Legion of Honour. In 1855 he received the grand medal of honour at the International Exhibition, and in

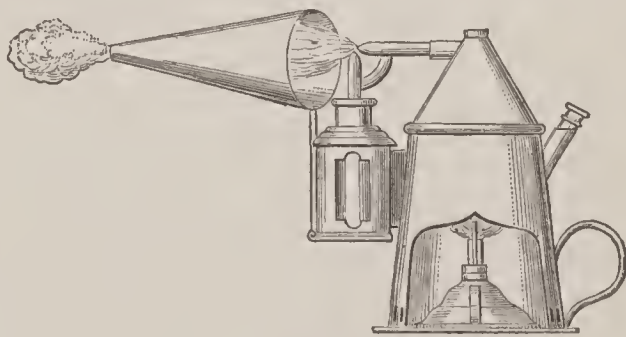
1862 he was made a senator and member of the council of public instruction. He died at Paris in 1867. Among the best known of his numerous pieces are *Bonaparte as First Council*, *Œdipus and the Sphinx*, *Apotheosis of Homer*, painted on the ceiling of one of the apartments of the Louvre; *Birth of Venus*, *Jesus in the Midst of the Doctors*, *Molière in his Study*, *Virgil Reading his Æneid to Augustus*, &c.

Ingria, a district of Russia, forming a part of the government of St. Petersburg, in which the capital, St. Petersburg, is situated, but at one time belonging to Sweden.

Ingrossing, in law. See *Engrossing*.

Ingulphus, or INGULF, Abbot of Croyland, is supposed to have been born in London about 1030. He became a favourite of Edgitha, the wife of Edward the Confessor, who introduced him to William, Duke of Normandy. In 1051 he became his secretary, resigning that office in 1064, when he became a monk in the abbey of Fontenelle, in Normandy, whence he was invited to England by William, and created abbot of the rich monastery of Croyland. He died in 1109. A history of the monastery of Croyland from 664 to 1091 was long attributed to him, but is now believed to be a fabrication of the 13th or 14th century.

Inhaler, an apparatus for inhaling vapours and volatile substances, as steam of hot water, vapour of chloroform, iodine, &c. The cut shows an inhaler of improved type.



Inhaler.

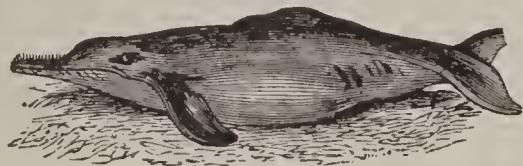
It consists of a tin can containing a small spirit-lamp, and above this a small kettle for hot water, the steam of which is driven out with some force when the apparatus is used. Attached to the can is a receptacle for receiving a small phial containing the substance whose vapour is to be inhaled, this being drawn off and forced through the funnel by the steam.

Inhambane (in-yām-bū'ne), a Portuguese town and seaport on the east coast of S. Africa, unhealthy, and with little trade.

Inheritance. See *Descent*.

Inhibition, in Scotch law, is a writ issued to prohibit a person from burdening or alienating his real estate till the debt of the creditor is paid.

Inia, a genus of Cetacea belonging to the dolphin family, containing only one known species, *I. boliviensis*, remarkable for



Inia boliviensis.

the distance at which it is found from the sea, frequenting the remote tributaries of the river Amazon, and even some of the elevated lakes of Peru. It has bristly hairs on its snout, and is from 7 to 12 or 14 feet long.

Injections, in surgery, fluids, different, according to the different effects desired to be produced, thrown by means of a small syringe into the natural cavities of the body, or those occasioned by disease. Wounds and sores are usually cleansed in this way when they extend far below the skin. In diseases of the nose, the ears, the bladder, and urethra, the uterus, &c., injections are often used. Pure warm water is injected with the highest success for the removal of pus, blood, or even foreign bodies. Sometimes astringent medicines, to restrain excessive evacuations, sometimes stimulating ones, sometimes soothing medicaments, to mitigate pain, &c., are added to the water.

Injunction, in American law, a writ which issues under the seal of a court of equity, to restrain proceedings in other courts. Injunctions are both common and special. In English law, a prohibitory writ, issuing from any of the divisions of the High Court of Justice restraining a person from doing some act which appears to be against equity, and the commission of which is not punishable by criminal law. It is either *provisional*, until the coming in of the defendant's answer, or *perpetual*, that is, perpetually restraining the defendant from the commission of an act contrary to equity. Disobedience to an injunction constitutes contempt of court, and is punishable accordingly. In Scotch law the corresponding term is *interdict*.

Ink, a liquor or pigment used for writing or printing. All ordinary writing inks owe

their properties to the presence of gallate or tannate of iron held in suspension by means of gum. Gall-nuts contain gallotannic acid, which gives a black precipitate with persalts of iron; they also contain pectose, which converts gallotannic acid, when exposed to the air, into gallic acid. This latter acid colours ferric salts a much deeper black than the former acid. The essential points in the preparation of a good writing ink are therefore the presence of an iron salt, an infusion of gall-nuts and gum, and the allowing the mixture to remain for some time exposed to the air. All other substances which are added to ordinary ink as colouring matters in the place of gall-nuts only impair its quality. As ink is liable to become mouldy it is customary to add a small quantity of such substances as essential oils, carbolic acid, crushed cloves, or sometimes corrosive sublimate, in order to prevent this result. For *copying ink* a little sugar is added, which prevents it drying rapidly and perfectly. The so-called *alizarin inks* differ from ordinary inks in containing a little free acid, and usually also a small quantity of indigo dissolved in sulphuric acid, which prevents too pale an appearance in writing. Such inks become very black by exposure to ammoniacal fumes. Ink is sometimes prepared in cakes or powder, which when dissolved in water may be used as ordinary ink; the thickening ingredients added are usually madder and indigo dissolved in sulphuric acid. Coloured writing-inks, as red, blue, &c., are simply solutions of some colouring materials, cochineal and Brazil-wood being used for red, Prussian blue for blue, &c. Gold and silver inks consist of a fine powder of the metals suspended in a solution of gum-arabic.—*Marking ink* usually consists of a solution of silver nitrate thickened with gum and sometimes coloured by means of sap-green.—*Printing-ink* may be made by boiling linseed-oil and burning it about a minute, and mixing it with lamp-black, with an addition of soap and resin. If it be wished to obtain coloured printing inks, this may be done by adding the necessary pigments to the oil while it is being heated. Vermilion is used to give a red colour, ultramarine for blues, and lead chromate for yellows.—*Lithographic ink*, used in printing from the stone, is usually composed of virgin wax, dry white soap, tallow or lard, shellac, mastic, and lamp or Paris black.—*Sympathetic inks* have been sometimes used in secret correspondence. They are of various kinds.

INK-BAG — INNOCENT.

For instance, characters written in solutions of cobalt, lemon juice, and dilute sulphuric acid make no appearance on the paper, but become visible when treated with some other solution or exposed to the action of heat. See also *Indian Ink*.

Ink-bag, **INK-SAC**, a bladder-shaped sac found in some dibranchiate cephalopods, as the calamaries or squids, and containing a black viscid fluid resembling ink. This fluid is to some extent used for drawing under the name of sepia.

Inkermann, a town of Russia, government Taurida, in the Crimea, at the head of Sebastopol harbour. It is famous for the signal victory of the allies in the Crimean war over the Russians on November 5, 1854.

Inland Revenue, that department of the British revenue which includes the branches of excise, taxes, and stamps. It yields a revenue of between £50,000,000 and £60,000,000, the largest proportion being contributed by the property and income tax, stamps, and the duties on spirits and beer.

Inlaying is the art of ornamenting flat surfaces of one substance by inserting into cavities cut in them pieces of some other substance. Various kinds of metal or wood, or pearl, ivory, &c., are employed in this process. See articles on *Marquetry*, *Damasceneing*, *Buhl*, *Reisner-work*, *Pietra-dura*, *Bidery*, *Mosaic*.

Inn, a river of Europe which issues from a lake in Switzerland at the foot of the Rhaetian Alps, traverses the valley of the Engadine, flows through Tyrol and Bavaria, and after forming the boundary for some distance between Bavaria and Austria joins the Danube at Passau, after a course of about 300 miles.

Inn, a house where travellers are furnished, for the profit of the provider, with everything they have occasion for whilst on their journey. They may be set up without license by any person, provided he refrains from selling excisable liquors, which of course require a license. Public-houses, taverns, victualling-houses, and coffee-houses are all inns when the keepers of them make it their business to furnish travellers with food and lodging; otherwise they are not. Innkeepers are bound to take in all travellers and wayfaring persons, and to entertain them if they have accommodation for them (and they are only bound to give such accommodation as they have), at reasonable charges, provided they behave themselves properly. As a protection they have a lien

on the goods of their lodgers (with the exception of the clothing which they are actually wearing), so that they may retain them as security for the price of their lodging and entertainment.

Innate Ideas, certain primary notions or impressions, supposed by some philosophers to be given to the mind of man when it first receives its being, and to be brought into the world with it. Descartes distinguished ideas into *innate*, *adventitious*, and *factitious*. An innate idea he described as not one that presents itself always to our thought, for there could be no such idea; but one that we have within ourselves the faculty of producing. He did not enumerate such ideas, however.

Inness, **GEORGE**, landscape painter, was born in Newburg, N. Y., in 1825. No painter has represented the aspects of nature in the American climate with deeper feeling, a finer sentiment of light and color, or a better command of technical resources. His "American Sunset" was selected as a representative work of American art for the Paris Exposition of 1867.

Innocent, the name of thirteen popes, of whom only the following need be particularly dealt with:—**INNOCENT I.** succeeded Anastasius I. as Bishop of Rome in 402. He supported St. Chrysostom, and renounced the communion with the Eastern churches on account of their treatment of that eminent man. In 409 he was sent to obtain terms of peace from Alaric, but without success. He died in 417, and is one of the most distinguished saints, his day being July 28.—**INNOCENT II.**, a Roman of noble birth, elected pope in 1130 by a part of the cardinals, whilst the others elected Peter of Leon, who took the name of Anacletus. Innocent fled to France, where he was acknowledged by Louis VI. and by Henry II. of England; also by the Emperor Lothaire, who conducted him in 1133 to Rome, where Anacletus also maintained his claims as pope. Innocent was obliged to retire, and though reinstated in 1137 Anacletus maintained himself until his death in 1138. Innocent in 1139 held the second Ecumenical Council in the Lateran, which condemned the opinions of Arnold of Brescia, and declared the decrees of Anacletus null. Innocent died in 1143.—**INNOCENT III.**, Lothario, Count of Segni, born in 1161, was unanimously elected pope at the age of thirty-seven. He displayed great energy, and much enhanced the papal power. He ex

communicated Philip Augustus, king of France, and laid his kingdom under an interdict in 1200 because Philip had repudiated his wife, and obliged the king to submit. He extorted a similar submission from John, king of England, who refused to confirm the election of Langton as Archbishop of Canterbury, by laying the kingdom under an interdict, and in 1212 formally deposing him. Almost all Christendom was now subject to the pope, two Crusades were undertaken at his order, and his influence extended even to Constantinople. The cruel persecution of the Albigenses and the establishment in 1198 of the inquisitorial tribunals, from which the Inquisition itself originated, were noteworthy events of his pontificate. In 1215 he held a council by which transubstantiation and auricular confession were established as dogmas, and the Franciscan and Dominican orders were confirmed. Innocent died in 1216. He left various works on legal and theological subjects; and the *Stabat Mater*, *Veni Sancte Spiritus*, and other sacred hymns, are said to have been written by him.—**INNOCENT XI.**, Benedetto Odescalchi, born in 1611, served in his youth as a soldier, took orders at a later period, and rose through many important posts, until he was elected pope in 1676, on the death of Clement X. He was eminent for probity and austerity. Though hostile to the Jesuits, whose opinions he attacked in the decree *Super quibusdam axiomatis moralibus*, yet he was obliged to condemn Molinus and the Quietists. Being involved in a dispute with Louis XIV., the authority of the pope in France and elsewhere received a severe blow in the IV. Propositiones Cleri Gallicani (Four Propositions of the Gallican clergy, 1682). These disputes were highly favourable to the English Revolution, as it induced the pope in 1689 to unite with the allies against James II., in order to lower the influence of Louis XIV. He died in 1689, and was succeeded by Alexander VIII.

Innocents, FEAST OF HOLY, variously styled Innocents' Day and Childermas, a festival observed in the Western Church (including the Anglican) on the 28th, and in the Eastern Church on the 29th December, in commemoration of the massacre of the children at Bethlehem by the order of Herod.

Innsbruck, a town of Austria, capital of the Tyrol, beautifully situated on the Inn, near the confluence of the Sill, surrounded by striking groups of lofty mountains. Among

the chief buildings are the Hofkirche or Franciscan Church, containing the splendid tomb of the Emperor Maximilian I. and the tomb of Hofer; the church of St. James; the imperial castle or palace; the Golden Roof, a sort of oriel window roofed with gilt copper, and projecting in front of a building originally a palace of Count Frederick of Tyrol; the town-house; the Capuchin monastery; the university; and the provincial museum. Pop. 20,537.

Inns of Chancery, in London, nine institutions named Thavie's Inn, New Inn, Symond's Inn, Clement's Inn, Clifford's Inn, Staple's Inn, Lyon's Inn, and Barnard's Inn, formerly preparatory colleges for law students.

Inns of Court, four very ancient societies in London exclusively invested with the right to call to the English bar; also the buildings belonging to these societies, in which the members dine and barristers have chambers. The gentlemen belonging to these societies may be divided into benchers, outer barristers, inner barristers, and students. The benchers are the highest in rank, being usually Queen's Counsel; and it is they who have the right of granting or refusing a call to the bar, or of disbarring persons unfit to practise. The four inns of court are the Inner Temple and Middle Temple (formerly the dwelling of the knights templars, and purchased by some professors of law more than three centuries since); Lincoln's Inn and Gray's Inn (anciently belonging to the earls of Lincoln and Gray). Each inn is self-governing, and all have equal privileges. In each inn building there is a hall, chapel, library, &c., besides sets of chambers occupied by barristers and solicitors. Previously to being called to the bar it is necessary to be admitted a member of one of the inns of court and to go through a certain course of legal study and 'keeping terms.' Any person who has passed a public examination at any university in the British dominions may be at once admitted as a student to any of the inns. Every other person must pass an examination in the English and Latin languages and English history before a joint board appointed by the four inns. No solicitor, parliamentary agent, clerk to justice of the peace, or to any barrister, conveyancer, solicitor, &c., can be admitted as a student until such person ceases to act in any of these capacities and has taken his name off the roll of any court on which it

may stand. The educational year is divided into three terms. Attendance is not compulsory on students either at lectures or private classes; nor is it essential to study the practice of law in the chambers of a barrister or pleader, though this is recommended. A term is kept by the student being present at six dinners during the term in the hall of the society to which he belongs, or three if he is a member of one of the British universities. Students are required to pass an examination in Jurisprudence, Roman Civil Law, Constitutional Law and Legal History, the Law of Real and Personal Property, Common Law, Equity, and Criminal Law, there being four examinations in each year.

Inoculation, in medicine, the introduction, by a surgical operation, of a minute portion of infective matter into contact with the true skin, for the purpose of exciting artificially a milder form of some contagious disease, and thereby protecting the human system against similar attacks in future; keeping in mind, however, that such a process can be only of efficacy in regard to diseases which attack us only once in the course of our lives, such, for instance, as small-pox. The term is chiefly used in connection with small-pox. The practice of inoculation with the matter of small-pox, although long followed in some parts of Wales, seems to have been scarcely known throughout England till the early part of last century, and its adoption was chiefly due to the exertions of Lady Mary Wortley Montagu, who became acquainted with it in Turkey. For many years the practice met with the greatest opposition, both from the medical profession and the clergy; but latterly it came extensively into vogue, the small-pox thus induced being of a milder and much less often fatal type than ordinary small-pox. The great objection to it was that it tended to spread this serious disease, inoculated small-pox being equally infectious with the other kind. After the discovery of vaccination by Jenner in 1798 inoculation was gradually superseded, and the British legislature even prohibited the latter, while vaccination is compulsory. See *Small-pox* and *Vaccination*.

Inosite ($C_6H_{12}O_6$), a saccharine substance, isomeric with glucose, found in the muscular substance of the heart, in the lungs, kidneys, brain, &c. In 'Bright's disease' it has been found in the urine, and it exists also in several plants.

Inowracław (ē-nov-rāts'lāv), or JUNG-

BRESLAU, a town of Prussia, province of Posen. It has large beds of rock-salt and saltpetre-works. Pop. 13,548.

In Partibus Infidelium (literally, 'in parts belonging to infidels'), the title given since the 13th century to bishops appointed by the pope in countries where his sway is not recognized, and who, having no proper diocese, take their title from a territory which may have once formed a see, but does so no longer; thus Roman Catholic bishops in Britain formerly had such titles as 'Bishop of Nicopolis,' 'Bishop of Anazarba.'

Inquest. See *Coroner*.

Inquisition, in the R. Cath. Ch., a court or tribunal established for the examination and punishment of heretics. The institution was founded in the 12th century by Father Dominic, who was charged by Pope Innocent III. with orders to incite Catholic princes and people to extirpate heretics. Pope Gregory IX. in 1233 completed the design of his predecessors, and the Inquisition was successively introduced into several parts of Italy, and, with certain limitations, into some provinces of France. It never managed to establish itself in England at all. The tribunals of faith were admitted into Spain in the middle of the 13th century; but a firm opposition was made to them, particularly in Castile and Leon, and the bishops there maintained their exclusive jurisdiction in spiritual matters. A change, however, afterwards took place; and while in other countries of Europe the Inquisition could never obtain a firm footing—in some falling entirely into disuse, as in France—in Spain it became firmly established towards the end of the 15th century, under Ferdinand and Isabella, who used it as a weapon to break the strength of the nobles, and to render the royal authority absolute. In 1477, when several turbulent nobles had been reduced in the southern part of Spain, Queen Isabella went with the Cardinal Pedro Gonzalez de Mendoza to Seville, where this prelate, as Archbishop of Seville, made the first attempt to introduce the Inquisition, especially with regard to citizens of Jewish origin. After this the design was disclosed of extending it over the whole country. In the assembly of the states held at Toledo, 1480, the erection of the new tribunal was urged by the cardinal, and after some opposition established under the name of the General or Supreme Inquisition. The new court was opened in Seville in 1481. Torquemada, prior of the Dominican convent

INQUISITION.

at Segovia, and father-confessor to the Cardinal Mendoza, had already been appointed by Ferdinand and Isabella the first grand inquisitor in 1478. The Dominican monastery at Seville soon became insufficient to contain the numerous prisoners, and more than 2000 persons are said to have been burned alive in the first year or two. The pope, however, opposed the establishment of the Spanish Inquisition as the conversion of an ecclesiastical into a secular tribunal, and repeatedly summoned the inquisitor-general to Rome. Torquemada, instead of obeying, sent a friend to defend his cause, and in 1483 Sixtus IV. was obliged to yield and acknowledge Torquemada as inquisitor-general of Castile and Leon, and a later bull subjected Aragon, Valencia, and Sicily to the inquisitor-general of Castile. The introduction of the new tribunal was attended with risings and opposition in many places, as at Saragossa, but the people were obliged to yield in the contest. The tribunal was wholly dependent on the Spanish sovereigns, and became a powerful instrument for establishing the arbitrary power of the king on the ruins of the national freedom; for putting down the clergy, who had previously acknowledged only the jurisdiction of the Roman see; and for oppressing the nobles, and taking away the privileges of the estates. The property of those who were condemned fell to the king; and, although it had been granted to the Inquisition, it was still at his disposal. Ferdinand and Isabella, indeed, devoted a part of this property to found convents and hospitals; but the church, notwithstanding, lost many possessions by means of the Inquisition. It is computed that there were in Spain above 20,000 officers of the Inquisition, called *familiars*, who served as spies and informers. These posts were sought even by persons of rank, on account of the great privileges connected with them. The supreme tribunal, under the inquisitor-general, sat at Madrid. He was assisted by a council of six or seven, and there were various officials belonging to the court, the one specially appointed to carry on prosecutions being called the *fiscal*. As soon as an accuser appeared, and the *fiscal* had called upon the court to exercise their authority, an order was issued to seize the accused. If he did not appear at the third summons he was excommunicated. From the moment that the prisoner was in the power of the court he was cut off from the world. The advocate who was appointed to defend him

could not speak to him except in the presence of the inquisitors. The accused was not confronted with the accuser nor the witnesses before the court, neither were they made known to him; and he was often subjected to the torture to extort a confession, or to explain circumstances which had not been fully explained by the witnesses. Imprisonment, often for life, scourging, and the loss of property, were the punishments to which the penitent was subjected. Wearing the *san-benito*, or vest of penitence,—a sort of coarse yellow tunic, with a cross on the breast and back, and painted over with devils—was a common method of punishment, the penitent having to wear it for a fixed period. When sentence of death was pronounced against the accused the *auto de fe*, or ceremony of burning the heretic in public, was ordered. This usually took place on Sunday, between Trinity Sunday and Advent. As ‘the church never pollutes herself with blood,’ a servant of the Inquisition, at the close of the procession and ecclesiastical ceremonial preceding the execution of the sentence, gave each of those who had been sentenced a blow with the hand, to signify that the Inquisition had no longer any power over them, and that the victims were abandoned (*relaxados*) to the secular arm. A civil officer, ‘who was affectionately charged to treat them kindly and mercifully,’ now received the condemned, bound them with chains, and led them to the place of execution. They were then asked in what faith they would die. Those who answered the Catholic were first strangled; the rest were burned alive. Even in more modern times the original organization of the Inquisition was but little changed, but the *auto de fe* was seldom witnessed during the last century. The powers of the Inquisition latterly became more limited, however, by various restrictions, and at last, under Joseph Bonaparte, it was abolished altogether in 1808. It was re-established in 1814 by Ferdinand VII., but on the adoption of the constitution of the Cortes in 1820 it was again abolished. According to the estimate of its historian, Llorente, the number of victims of the Spanish Inquisition from 1481 to 1808 amounted to 341,021. Of these nearly 32,000 were burned.

The Inquisition, abolished for Italy by Napoleon in 1808, restored in Rome by Pius VII. in 1814, still exists, nominally at least, as one of the ‘congregations.’ The censorship of the press was under it,

Insanity, a general term comprising every form of intellectual disorder, whether consisting in a total want or alienation of understanding, as in idiocy, or in the diseased state of one or several of the faculties. Medical writers have adopted different systems of classification in their treatment of this subject; but perhaps the most convenient is that which comprises all mental diseases under the four heads of mania, melancholy, dementia or fatuity, and idiocy. *Idiocy* is either a congenital or an acquired defect of the intellectual faculties. Congenital idiocy may originate from a malformation of the cranium, or of the brain itself. Acquired idiocy proceeds from mechanical injury of the cranium, or from injury or disease of the brain, from excess in sensual indulgences, &c. (See *Idiot*.) *Dementia* is marked confusion of thoughts, loss of memory, childishness, a diminution or loss of the powers of volition, and general weak-mindedness; it differs from idiocy in being curable. *Cretinism*, sometimes given as a separate category, is a form of idiocy associated with a characteristic malformation of the body. *Mania* is a species of mental derangement characterized by the disorder of one or several of the faculties, or by a blind impulse to acts of fury. Adults are the principal subjects. Females are more exposed to it than males. Violent emotions, a dissipated life, excess in any indulgence, sometimes produce it. It is sometimes cured, but sometimes remains stationary, and sometimes is converted into dementia. *Melancholy* is a species of mental disorder consisting in a depression of spirits. Some dark or mournful idea occupies the mind exclusively, so that by degrees it becomes unable to judge rightly of existing circumstances, and the faculties are disturbed in their functions. Several kinds of melancholy are distinguished; the distinctions are founded, however, mostly on the causes of the disease, amongst the more important of which are love, religious views, repeated failures to reach an earnestly desired end, a sudden nervous shock, and the like. The course of the disease is various; sometimes it lasts a series of years; sometimes it ceases of itself, or is cured by medical aid. Very frequently melancholic patients commit suicide, a tendency that is not to be overlooked. In it also bodily health is likely to be neglected, thus leading to certain other diseases. See *Lunatic Asylum*, *Lunacy*, *Non compos mentis*, &c.

Inscriptions, ACADEMY OF. See *Institute of France*.

Insectiv'ora, an order of mammals living to a great extent on insects. They are plantigrade, and have a well-developed clavicle, a discoidal placenta, incisor teeth larger than the canine, and molar teeth set with sharp conical cusps. They are usually of small size, and many of them live underground, hibernating for some months. They are found throughout the world, with the exception of Australia and South America. The chief insectivorous families are the Talpidæ or moles, the Soricidæ or shrew-mice, and the Erinaceidæ or hedgehogs.

Insectivorous Plants, plants which derive nourishment directly from the bodies of insects entrapped by them in various ways. See *Dionæa*, *Sun-dew*, *Pitcher-plant*.

Insects. See *Entomology*.

Insertion, in botany, the place or mode of attachment of an organ to its support, used especially in regard to the parts of a flower. Insertion is described as *epigynous* when it occurs on the summit of the ovary, as *hypogynous* when beneath the ovary, and *perigynous* when upon the calyx surrounding the ovary.

Insesso'res, in ornithology, the perchers or passerine birds, an extensive order of birds, comprehending all those which live habitually among trees, with the exception of the birds of prey and the climbing birds. The toes, which are three before and one behind, are specially adapted for perching and nest-building. These birds live in pairs, build in trees, and generally display great art in the construction of their nests. In them the organ of the voice attains its utmost complexity, and all our singing birds belong to the order. The form of the beak varies widely, and this has led to the establishment of four important subordinate groups. (1) The *Conirostres*, or 'conical-beaked' Insessores; (2) The *Dentirostres* or 'tooth-beaked' perchers; (3) The *Tenuirostres*, or slender-beaked perchers; (4) The *Fissirostres* or cleft-beaks (swallows, swifts, goat-suckers, &c.). In modern classifications the Fissirostres are generally excluded from the order, which is also divided otherwise. Two main divisions, the *Acromyodi* or singing-birds and the *Mesomyodi* or songless birds, are now generally recognized, the distinctive characters being based on the structure of the larynx. The former, again, are divided into the *Turdiformes*, or thrush-like birds; the *Fringilliformes*, or finch-like birds; and the *Stur-*

niformes, or starling-like birds. See also *Ornithology*.

Insig'nia, the name given to all outward marks of power and dignity, such as the golden crown, the ivory chair, and the twelve lictors with their axes in the time of the Roman kings; the crowns and sceptres of European monarchs; the pallium, the infula, the staff, and ring of the higher orders of the Roman Catholic priesthood. The name of insignia is also applied to the decorations worn by the different orders of merit.

Insolvency. See *Bankrupt*.

Inspiration, in theology, is the infusion of ideas into the human mind by the Holy Spirit. By the *inspiration of the Scriptures* is meant the influence of the Holy Spirit exercised on the understandings, imaginations, memories, and other mental faculties of the writers, by means of which they were qualified for communicating to the world divine revelation, or the knowledge of the will of God. Theological writers have enumerated several kinds or degrees of inspiration, which are founded upon the supposition that God imparted to the sacred penmen that measure and degree of assistance which was just suited to the nature of the subjects which they committed to writing, and did not supersede the use of their natural powers and faculties, and of their acquired knowledge, where these were sufficient. Thus distinctions have been drawn between inspiration of direction, inspiration of superintendency, inspiration of elevation, and inspiration of suggestion. All orthodox theologians agree in ascribing divine assistance to the scriptural writers, but differ widely as to the degree, extent, and mode of inspiration. The advocates of *plenary* inspiration assert that every verse of the Bible, every word of it, every syllable, every letter is the direct utterance of the Most High. In opposition to this theory some writers confine inspiration to all that is directly religious in the Bible, to all that is matter of direct revelation, leaving out of the question all that can be known by ordinary intellectual application. Other authorities attribute inspiration only to the spirit, ideas, or doctrines of the Scriptures, exempting the strict form or letter. Some go yet further, and include in the fallible sections the mode of argument and expository details.

Insterburg, a town of Prussia, province of East Prussia, 16 miles west from Gum-

binnen, at the confluence of the Angerap and Inster, which here form the Pregel. It has iron-foundries, distilling, brewing, manufactures of linen, leather, and earthenware, &c. Pop. 20,914.

Instinct, the power by which, independently of all instruction or experience, and without deliberation, animals are directed to do spontaneously whatever is necessary for the preservation of the individual, or the continuation of the kind. Three main theories have been held with regard to instinctive actions:—(1) That these various impulses and faculties were bestowed by the Creator upon each species as its necessary and characteristic outfit. (2) That instinct is the accumulated results of individual experience, fixed by repetition, and transmitted as an inheritance to succeeding races. In this view instinct is intelligent in its origin, an organized experience, a 'lapsed intelligence.' (3) That the greater number of complex instincts arise through the natural selection of variations of simpler instinctive actions—variations arising from unknown causes. The last theory is that of Darwin.

Institute of France, the principal philosophical and literary society of France, organized after the first storm of the French Revolution in 1795, to replace the Académie Française, the Académie des Sciences, and the Académie des Belles Lettres et Inscriptions, its object being the advancement of the arts and sciences. The Institute now embraces five distinct divisions or *académies*, each having a separate field of knowledge or thought. (1) The *Académie Française*, originally established early in the 17th century. Its department is the French language and literature, and its ordinary members number 40. (2) The *Académie des Inscriptions et Belles Lettres*; ordinary members, 40. (3) The *Académie des Sciences*; ordinary members, 65. (4) The *Académie des Beaux Arts*; ordinary members, 40. (5) The *Académie des Sciences, Morales, et Politiques*; ordinary members, 40. Each academy has an independent organization and a free disposition of the funds committed to it. Members are elected for life by ballot, and have an annual salary of 1500 francs. To each academy are attached a certain number of honorary members and foreign associates. Admission into the Académie Française is a great object of ambition with most French literary men. The name of this distinguished body was changed

in 1848 to *Institut National de France*, having previously been called *National*, *Imperial*, and *Royal* at different times.

Institutes, a book of elements or principles; particularly a work containing the principles of a system of jurisprudence; as the *Institutes* of Justinian; the *Institutes* of Gaius; Erskine's *Institutes* of the Law of Scotland.

Instrument, in music, any mechanical contrivance for the production of musical sound. Musical instruments are divided into three kinds—wind-instruments, stringed instruments, and instruments of percussion. The chief modern stringed instruments are the violin, viola, violoncello, and double bass, the harp, mandoline, guitar, and piano; the chief wind-instruments, the flute, oboe, bassoon, clarinet, basset-horn, serpent, horn, trumpet, trombone, ophicleide, and organ; the chief percussion instruments, the drum, tambourine, cymbals, and triangle.

Instrumental Music, music produced by *instruments*, as contradistinguished from *vocal* music. Instrumentation is quite a modern art, and may be said to have been first cultivated to any purpose among the Italians, who up till the middle of last century, however, used only instruments of the viol kind, and who even yet are sparing in their use of wind-instruments. In Italy, Leo, Durante, Jomelli, and Majo; in France, Rameau; in Germany, Haydn and Mozart, deserve the credit of carrying the art to a perfection up to their time undreamed of. Further developments of an important character are due to Berlioz and Wagner.

In'sulator, a body used to separate an electrified conductor from other bodies, and which offers very great resistance to the passage of electricity. Glass, shellac, resins, sulphur, ebonite, gutta-percha, silk, and baked wood are notable insulating materials.

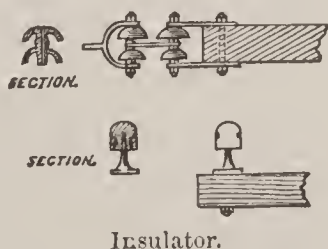
The cut shows the usual forms of insulators in telegraph lines to support the wires on the posts. They are usually made of porcelain or glass.

Insu'rance is a contract whereby, for a stipulated consideration, called a *premium*, one party undertakes to indemnify another against certain risks. The party undertaking to make the indemnity is called the *insurer* or *underwriter*, and the one to be indemnified the *assured* or *insured*. The

instrument by which the contract is made is denominated a *policy*; the events or causes of loss insured against, *risks* or *perils*; and the thing insured, the *subject* or *insurable interest*. *Marine* insurance relates to property and risks at sea; insurance of property on shore against fire is called *fire* insurance. *Life* insurance, in its widest sense, is a contract entered into by the insurer to pay a certain benefit contingent upon the duration of one or more lives. Besides these classes of insurance there are many others: the traveller may insure himself against loss entailed from damage by rail or sea; the farmer from the inroads of disease among his live stock; the employer from the fraud of a dishonest cashier, &c. Our attention will, however, be confined to the first three divisions.

The practice of marine insurance seems to have long preceded insurances against fire and upon lives, and probably dates from the end of the 14th or beginning of the 15th century. It is, however, contended, on the authority of Livy, that traces of the practice may be found during the second Punic war, while other writers, founding on a passage of Suetonius, ascribe the introduction of the principle to the Emperor Claudius. Nearer our own day, there are extant rules of sundry guilds or social corporations of the Anglo-Saxons, whereby, in consideration of certain contributions, the members guarantee each other against loss from fire, water, robbery, or other calamity. Insurance, viewed in its commercial aspect, however, seems to have been first undertaken in Flanders. It is probable, from a statement in 43 Eliz. cap. xii., that insurance was introduced into England by the Lombards early in the 16th century.

While all fire and life assurances are made at the risk of companies which contain within themselves the requisites of security, wealth, and numbers, a large proportion of marine insurances is made at the risk of individuals called underwriters. The London underwriters form an influential society known as Lloyd's. As a small number of risks would not secure a safe average to the individual insurer, owing to the great hazard property at sea is exposed to, he prudently takes but a fractional part of the entire risk on himself, and this is effected by subscribing or *underwriting* the stipulated proportion on a policy drawn out for the entire sum to be covered. The necessity for circulating the policy and negotiating



INSURANCE.

the insurance has given rise to the business of the *insurance broker*, with which, however, that of the underwriter is frequently combined. Policies are either *valued*, where the insurance is based on a specific bill of lading, or *open*, where, in the case of loss, the value of a vessel with her stores is estimated as at the date of sailing, her freight at the amount she would have earned had the voyage been successfully accomplished, and her cargo at its invoice price, adding premium and all charges. The losses against which the insured is not protected are:— 1. Acts of the government, such as the destruction of goods in quarantine. 2. Breach of the revenue laws. 3. Consequences of deviation from the terms of the policy. 4. Breaches of the law of nations, such as failure in attempting to run a blockade. 5. Unseaworthiness, or incompetency of the master. 6. Loss arising from unusual protraction of the voyage. 7. Liability for doing damage to other vessels. 8. Average (which see).

Fire insurance is a contract of indemnity by which the insurer, in consideration of a certain premium, undertakes to indemnify against all loss or damage in buildings, stock, goods, &c., by fire during a certain period. Insurances of this nature are hardly ever made by individuals, but almost invariably by corporations and joint-stock companies. Fire insurance has been practised in Britain for nearly two centuries, but was introduced considerably later on the European continent and in America. At an early period after its institution it was considered a legitimate subject for taxation, the tax, however, being abolished in 1869. Insurances are generally divided into common, hazardous, and doubly hazardous, the premium increasing with the degree of risk. Nothing can be recovered from the insurers in the event of loss unless the party insuring had an interest or property in the subject insured at the time the insurance was effected and when the fire happened. Sometimes no single office will insure to the required amount; in such a case it is done by different offices. Fire insurance being a contract of indemnity, it is only the actual loss that can be recovered. The premises must not be materially altered, except by arrangement, during the risk, otherwise the policy will be void. The policy will also be vitiated should there be any misrepresentation or omission in the description of the subject insured; and the

insurers do not hold themselves liable for loss or damage by foreign enemy, riot, civil commotion, or military or usurped power.

Life insurance is a much simpler contract in many respects than either of the preceding. There can be but one loss, that caused by death, and therefore there is no partial loss nor average. The rate of 3 per cent has generally been adopted as a basis for the calculation of premiums. The mortality table most generally adopted is that first published by Mr. Milne, derived from the observations of Dr. Heysham on the rate of mortality in Carlisle during the nine years 1779 to 1787 inclusive, and hence known as the Carlisle table. Life insurance companies are divided into three classes. The first consists of corporations or joint-stock companies, who undertake to pay fixed sums upon the death of the party insuring with them; the profits of such societies are wholly divided among the proprietors. The second class is formed on the basis of mutual insurance, the members themselves being the company, and liable to each other for all claims, the profit accruing therefrom being from time to time allotted to the insured, generally in the form of *bonuses*. The third class, or mixed companies, are proprietary companies charging such increased rates as will yield a bonus, but which, in return for the working expenses and guarantee of their capital, reserve a stipulated portion of their profits for their proprietors. It is impossible to say with certainty which is the preferable form. Life insurance not being a contract of indemnity, a person may insure in as many offices as he likes, and his executors will recover the full amount from each of the insurers. To prevent gambling upon life assurance it was enacted by 14 Geo. III. cap. xlviii. that no insurance shall be made by any person or persons where there is no direct personal interest. It is legal for a wife to insure her husband's life, as she is dependent upon him for support; or for a husband to insure his wife's if she has an annuity or property settled upon her for life in which he has an interest; or for a creditor to insure his debtor's life. The policy is void where obtained by false representations. Life insurances are often assigned as a security for debt: the assigner binds himself to pay the premiums. Every life insurance company in Britain is bound to prepare a yearly statement of its revenue and of its balance-sheet according to prescribed forms, and

must cause certain periodical investigations to be made into its affairs, and prepare and furnish to shareholders and policy-holders periodical statements of its business. In the United States a rigid supervision is exercised by State departments acting under State laws. Full details relative to their business must be rendered annually by the insurance companies, concerning their investments and liabilities, and their sources of income and expenditure. The courts have constructed a body of jurisprudence perhaps more ample in its scope and more thoroughly digested than in any European country.

In'terdict, an ecclesiastical censure in the R. Cath. Ch., the effect of which, taken in its most extended sense, is, that no kind of divine service is celebrated in the place or country under the sentence; the sacraments are not administered, the dead not buried with the rites of the church. This interdict is called *real* or *local*, whilst the personal interdict regards only one or more persons. Gregory VII., though not the inventor of this engine of ecclesiastical power, used it oftener and more tyrannically than any of his predecessors. The 11th century was pre-eminently the century of interdicts, but they gradually lost power; and when Paul V. laid Venice under an interdict in 1606 the churches were not closed nor divine service interrupted, and only a minority of the bishops acknowledged it. The interdict must be announced, like the excommunication, in writing, with the causes, and is not to be imposed until after three admonitions. The penalty of disobedience to an interdict is excommunication. Writers of the Gallican Church say that the pope has no right to lay France under an interdict, and the parliaments refused to register them. Interdicts are not to be confounded with the simple *cessatio a divinis*, or the disuse of religious ceremonies, which takes place when a church has been polluted, for example, by a murder committed in it.

Interdict, in Scots law, an order of the Court of Session, or of a subordinate court, for stopping or prohibiting a person doing an act complained of as unlawful or wrongful. In the Court of Session the interdict is obtained on presenting a note of suspension and interdict to the lord ordinary on the bills; in the subordinate courts by a summary petition to the inferior judge. It corresponds to what is termed in Eng-

land a writ of injunction. See *Injunction*.

Interest is the allowance made for the loan or retention of a sum of money which is lent for, or becomes due at, a certain time; this allowance being generally estimated at so much per cent per annum, that is, so much for the use of £100 for a year. The money lent or forborne is called the *principal*; the sum paid for the use of it, the *interest*. The interest of £100 for one year is called the *rate per cent*, and the sum of any principal and its interest together, the *amount*. Interest is either *simple* or *compound*. *Simple interest* is that which is allowed upon the principal only, for the whole time of the loan or forbearance. *Compound interest* is that which arises from any sum or principal in a given time by increasing the principal, at fixed periods, by the interest then due, and hence obtaining interest upon both interest and principal. The rate of interest, supposing the security for the principal to be equal, depends obviously upon what may be made by the employment of money in various industrious undertakings, or on the rate of profit. Where profits are high, interest is high, and *vice versa*; in fact, the rate of interest is simply the net profit on capital. Besides this, however, the interest on each particular loan must further vary according to the supposed risk of the lender, the supposed solvency of the borrower, &c. In Europe formerly the imposition of interest was alternately prohibited and permitted, the clergy being generally unfavourable to the practice. Calvin was among the first to expose the error and impolicy of prohibition. In 1546 it first received a parliamentary sanction in England, and it was fixed at 10 per cent; in 1624 it was reduced to 8, in 1651 to 6, and in 1724 to 5, at which rate it remained till 1854, when all usury acts were repealed. In England, when a debt has become overdue, the debtor is not legally bound by common law to pay any interest; if interest is to be paid, an express agreement must be entered into. Bills and notes, by the usage of trade, carry interest from the date they become due; such interest being recoverable as damages, but the jury are not bound to give it. In Scotland interest is due generally on all debts which have become overdue. In the United States interest is generally awarded by the courts on overdue debts.

INTERFERENCE — INTERNATIONAL LAW.

Interfe'rence, in physics, the mutual action of waves of any kind (whether those in water, or sound, heat, or light waves) upon each other, by which, in certain circumstances, the vibrations and their effects are increased, diminished, or neutralized. When two minute pencils of light, radiating from two different luminous points, and making a small angle with each other, fall upon the same spot of a screen or a piece of paper, it is found that in some cases they illuminate the paper or screen more strongly than either would have done singly, and sometimes they destroy each other's effects and produce a black spot or fringe. Such phenomena have been explained in accordance with the undulatory theory of light, and furnish a strong argument in favour of that theory. The interference of waves of sound is a phenomenon which may be frequently observed in the *beat* of the tones of the heavier organ pipes. Again, to a person situated in the middle of a bell the sound waves from the vibrating segments of the bell interfere and produce only a moderate loudness, whereas to a person at a short distance outside the edge the loudness is intolerable.

Interjections (literally 'things thrown in between'), in grammar isolated words or particles which serve to express any strong feeling or emotion, and which consist for the most part of an exclamation, for example, of astonishment, as *ah!* or *oh!* of pain or lamentation, as *alas!*

Interla'ken ('between the lakes'), a village in Switzerland, in the canton, and 26 miles S.E. of Berne, beautifully situated near the left bank of the Aar, between the lakes of Thun and Brienz, much resorted to by tourists.

Interloc'utor, in Scots law, a judgment or sentence pronounced in the course of a suit, but which may not finally determine it.

In'terlude, originally an entertainment exhibited on the stage between the acts of a play, or between the play and the afterpiece, to amuse the spectators while the actors rested or shifted their dress, or the scenes and decorations were changed. In England dramas appear to have borne this name from the time they superseded the miracle and mystery plays till the period of the Elizabethan drama. The name is also given to a brief piece of church music, prepared or extempore, for the organ, and played after each stanza except the last of a metrical psalm or hymn.

Inter'ment. See *Burial*.

Intermezzo (in-tér-met'so), in dramatic literature, nearly the same as interlude, a short musical piece, generally of a light sparkling character, played between the parts of a more important work, such as an opera, drama, &c. Pieces intended for independent performance are sometimes designated by this name by the French and Italians.

Intermittent Fever. See *Ague*.

International Law, the law of nations; those rules or maxims which independent political societies or states observe, or ought to observe, in their conduct towards one another. International law is divisible into two heads, the one which regulates the rights, intercourse, and obligations of nations, as such, with each other; the other, which regulates the rights and obligations more immediately belonging to their respective subjects. Thus the rights and duties of ambassadors belong to that head which respects the nation in its sovereign capacity; and the rights of the subjects of one nation to property situated within the territory of another nation, belong to the latter head. Some of the maxims regarding the rights and duties of nations during a state of peace are:—(1) Every nation is bound to abstain from all interference with the domains of other nations. (2) All nations have equal and common rights on the high seas, and they are not bound to admit any superiority there. The sea which washes the coast of a nation, to the extent of three miles, is now deemed to be a part of the territory of the nation, over which it may exercise an exclusive jurisdiction. And, in respect to persons subjected to its laws, every nation now claims a right to exercise jurisdiction on the high seas, for the purpose of enforcing both international law and its own municipal regulations. (3) No nation has a right to pursue any criminal or fugitive from justice in a foreign country; its claim, if any, is a mere right to demand him from the nation in which he has taken refuge. (4) Every nation has a right to regulate its own intercourse and commerce with other nations. (5) Foreigners are bound to obey the laws of a country as long as they reside within it, and under its protection; and the property held by foreigners within a country ought to be protected in the same manner as that of natives. (6) Every nation has a right to send and to receive ambassadors and

other public ministers; and this right of embassy has always been deemed peculiarly sacred. Their persons are held sacred and inviolable. Their property, and servants, and retinue enjoy a like privilege. (See *Ambassador*.) (7) It is through the medium of ambassadors and other public ministers that treaties, conventions, and other compacts between nations are usually negotiated, thus forming a positive code for the regulation of their mutual rights, duties, and interests. In the modern practice of nations such treaties and compacts are not generally deemed final and conclusive until they have been ratified by the respective governments to which the negotiators belong.

War introduces an entirely new order of rules. The right of declaring war results from the right of a nation to preserve its own existence, its own liberties, and its own essential interests. In a state of nature men have a right to employ force in self-defence; and when they enter into society this right is transferred to the government, and is an incident to sovereignty. What are just causes for entering into a war is a question which has been much discussed by publicists. Defensive wars are necessarily justifiable from the fact that they involve the existence or safety of the nation and its interests. But offensive wars are of a very different character, and can be justified only in cases of aggravated wrongs or vital injuries. The first effect of a declaration of war is to put all the subjects of each of the nations in a state of hostility to each other. All the property belonging to each is deemed hostile. If it be personal property it may be captured as prize; if lands, it may be seized and confiscated at the pleasure of the sovereign; if it be merely in debts or stock it may, in the extreme exercise of the laws of war, be equally liable to confiscation. As soon as a battle is over the conquerors are bound to treat the wounded with kindness, and the prisoners with a decent humanity. And there are some things which seem positively prohibited from their cruelty and brutal barbarity; such are the violation of female captives, the torturing of prisoners, the poisoning of wells, the use of inhuman instruments of war. In time of war there is occasionally an intercourse between the belligerents which should always be held sacred. Thus the interchange of prisoners by cartels; the temporary suspension of

hostilities by truces; the passage of flags of truce; the engaging in treaties of capitulation. When any conquest of territory is made the inhabitants pass under the dominion of the conqueror, and are subject to such laws as he chooses to impose upon them. There are also certain rights which war confers on the belligerents in respect to neutrals. Thus they have a right to blockade the ports or besiege the cities of their enemies, and to interdict all trade by neutrals with them. But no blockade is to be recognized unless 'the besieging force can apply its power to every point in the blockaded state.' They have a right also to insist that neutrals shall conduct themselves with good faith, and abstain from all interference in the contest by supplying their enemy with things contraband of war. And hence arises the incidental right of search of ships on the high seas for the detection of contraband goods. A neutral nation is bound to observe entire impartiality between the belligerents. Neutral nations are, strictly speaking, bound to compel their subjects to abstain from every interference in the war, as by carrying contraband goods, serving in the hostile army, furnishing supplies, &c. Subject to the exceptions above referred to, a neutral has a right to insist upon carrying on its ordinary commerce with each of the belligerents in the same manner as in times of peace. See *Neutrality*.

International Society, a social and political organization of the working-classes formed in 1862 in London through the combined efforts of representatives of the French socialists, English trades-unionists, extreme radicals, and political refugees of all nationalities. It arose out of the visit of a body of French workmen sent over to England by Napoleon III. to visit the exhibition, and to fraternize with their English fellows. Its original purpose was to prevent needless competition among workmen, to regulate strikes, to establish common interests among the working-classes in different lands, and generally to amend their condition by all practicable means. At a great meeting in London in 1864, under the leadership of Karl Marx, Odger (the first president of the society), and others, a more political character was given to it. The conference at Lausanne bore this character still more strongly. The wealth and influence of the society continuing to increase, its aims became more distinctly revolutionary, and the

society threw all its influence on the side of the Communists of Paris in the spring of 1871, when many of its leaders perished. As the result of the congress at the Hague in 1872, the general council split up into two sections; the minority, composed of British, Swiss, Spanish, and Italian representatives, deciding to form a European confederation apart from the extreme section under the leadership of Marx and the French Communists, which then transferred its headquarters from London to New York. Since that time the doings of the society have attracted little public attention.

Internun'cio, an envoy of the pope, sent to small states and republics, distinguished from the nuncio who represents the pope at the courts of emperors and kings.

Interplead'er, in law, the right or process by which a man who is called upon by two opposite parties to pay a sum or deliver over goods, and who is not sure which party is the rightful claimant, can call upon the parties to come forward as against each other, and so relieve him.

Inter'polation, a branch of mathematical and physical analysis, treating of the methods by which, when a series of quantities or observations succeeding each other according to some determinate law have been found, others subject to the same law may be interposed between them. Thus, the sun's right ascension being found for every Greenwich noon, its values at any other times may be filled in by interpolation; and similarly from a series of observed relations between the temperature and pressure of saturated steam, the pressure corresponding to any temperature may be found.

Interstellar Æther. See *Luminiferous Æther*.

Interval, in music, the distance between two given sounds, or their difference in point of gravity or acuteness. Intervals are *simple* when confined within the octave, and *compound* when they exceed it, and are named according to the distance of the two boundary notes. Thus the interval of a whole tone (CD) is called a second, of a whole tone and a semitone (CEb) a minor third, &c. All the intervals of any major scale reckoning up from the key-note are *major*. Intervals a semitone less are *minor*. If they are a semitone greater than major, they are *augmented*; if a semitone less than minor, they are *diminished*. See *Musie*.

Intes'tacy, in law, the condition of a person who dies without having left any will

at all, or having left one not legally valid, or such a will that nobody becomes heir under it. The general principle in Britain and the United States is that the law provides an heir or next of kin if the owner himself has not done so. In the case of a person dying partially intestate, the property not included in the settlement goes to the heir-at-law or next of kin according as it is real or personal estate.

Intes'tine (Lat. *intestinum*, from *intus*, within), the name given to the convoluted membranous tube which extends from the right or pyloric orifice of the stomach to the anus, and which receives the ingested food from the stomach, retains it for a longer or shorter period, mixes it with the bile, pancreatic juice, and intestinal secretions, gives origin to the lacteal or absorbent vessels which take up the chyle and convey it into the current of the blood, and which, lastly, conveys the fæcal or indigestible products from the system. In man it is usually divided into the *small intestine*, which comprehends the duodenum, jejunum, and ileum; and the *large intestine*, comprehending the cœcum, colon, and rectum. Three distinct coats are to be distinguished in the structure of the small intestine; these, named from without inwards, are known as the *serous*, *muscular*, and *mucous* coats. The innermost or mucous coat presents several interesting structures. Among these are the *valvule conniventes*, or closely folded transverse plaits of the mucous membrane, the functions of which would appear to be those of serving materially to increase the digestive surface or area of the intestine, and thoroughly mingle the ingesta with the secretions. The surface of the membrane is covered with innumerable fine projections termed *villi*, which give to it almost a velvety texture. Each villus is found under the microscope to be an outstanding process of the mucous membrane, containing internally an artery giving off minute ramifications, a vein by which the venous blood is



Human Stomach and Intestinal Tube.

a, Stomach.—*b* to *d*, Small Intestine. *b*, Duodenum. *c*, Jejunum with convolutions. *d*, Ileum, with do.—*e* to *g*, Large Intestine. *e*, Cœcum, *f*, Colon. *g*, Rectum.

returned, and, lastly, the lacteal or absorbent vessel. The function of the villi, which are most numerous in the duodenum, is pre-eminently that of the absorption of the chyle or fluid product of digestion, as a preliminary to its transmission to the current of the blood or circulation. Four varieties of glands are also connected with the small intestine, the first three being named after their respective discoverers, Lieberkühn, Peyer, and Brünner, and the other variety occurring singly—the ‘solitary’ glands—and in groups—Peyer’s patches. The exact functions of these bodies are not well known. The duodenum lies in the epigastric region, and makes three turnings, receiving by a common opening between its first and second flexure the bile-duct and the pancreatic-duct. The conversion of the chyme from the stomach into chyle is thus accomplished in the duodenum. The jejunum, commencing at the left side of the second lumbar vertebra, becomes insensibly and gradually continuous with the ileum, which, terminating the small intestine, becomes continuous with the large intestine in the right iliac fossa, and opens into the colon, or first portion of the large intestine, which is divided from the large intestines by the *ileo-cæcal* valve. Below the point at which the ileum opens into the colon we find a short blind sac continuous with the colon, and known as the *cæcum*; and attached to the lower extremity of the cæcum, and communicating with the cæcal cavity, we find a little closed tube, to which the name of *appendix vermiformis* is applied. We next find the colon to ascend in the right lumbar region, in front of the kidney. This portion is known as the *ascending colon*. It then crosses the abdominal cavity to the left side, and becomes the *transverse colon*; and finally descends as the *descending colon*, in front of the left kidney into the left groin, where, after making a curve like the letter S—*sigmoid flexure* of the colon—it terminates in the last portion of the intestinal tract. This last portion, known as the *rectum*, finally terminates in the anus. The large intestine measures from 5 to 6 ft. in length; the small intestine measures from 16 to about 24 or 26 feet in length; so that the entire intestinal tract may be regarded as being about five or six times the length of the body itself. The three coats of the small intestine are repeated in the large intestine. The mucous or inner coat is not elevated to form villi in the large, as in the

small intestine, and only two kinds of glands, the glands of Lieberkühn, and the solitary glands, are to be distinguished in the large intestine. The function of the large intestine is chiefly excretory, but a certain power of absorption is also exercised by its vessels. The food is propelled along the entire intestinal tract by the alternate contraction of the longitudinal and circular muscular fibres, by which means it is gradually pushed along the tube with a *vermicular* or *peristaltic* movement. The ileo-cæcal valve serves to prevent regurgitation of matters into the small intestine, after they have passed into the colon. The *mesentery* is the term given to the fold of peritoneum by means of which the small intestines are attached to the spine. The blood-vessels supplying the intestinal tube are the *superior* and *inferior mesenteric arteries* and their branches, derived from the *abdominal aorta*. The veins of the intestines empty their contents into the *vena portæ*, which distributes itself through the liver, and from the blood of which the bile is secreted by the hepatic or liver cells. The nerves of the intestines are derived from the *sympathetic* or *ganglionic system* of nerves, and have also a connection with the eighth cranial nerve—the pneumogastric nerve of the right side.

Into’ning, a musical modulation of the voice, differing from chanting chiefly in the fact that in the latter case the cadence is more developed, the divisions more rhythmical, and the music in continuous harmony. The practice prevails in the Greek, Roman, Anglican, and Lutheran Churches.

Intoxication, the state produced by the excessive use of alcoholic liquids. In the first stage the circulation of the blood becomes somewhat more rapid, and all the functions of the body and mind are exercised with more freedom. In the second stage the effect on the brain is more decided. The peculiarities of character, the faults of temperament, manifest themselves without reserve; the secret thoughts are disclosed, and the sense of propriety is lost. In the next degree consciousness is still more weakened; the ideas lose their connection; vertigo, double vision and other discomforts supervene; until finally the excitement partakes of the nature of delirium, and is followed by a more or less prolonged stupor, often by dangerous coma. In cases of extreme intoxication the stomach-pump should be employed, if ordinary emetics fail to overcome the torpor of the stomach. Among

INTRENCHMENT — INVERKEITHING.

the best antidotes are preparations of ammonia and strong infusions of coffee and green tea. The body should be kept warm.

Intrenchment, any work that fortifies a post against the attack of an enemy. The word is generally used to denote a ditch or trench with a parapet. See *Fortification*.

In'troit, a psalm or passage of Scripture sung or chanted while the priest proceeds to the altar to celebrate mass: now used for any musical composition designed for opening the church service.

Intromission, in Scots law, the assumption of the possession and management of property belonging to another, either on lawful grounds or without authority.

Intui'tion, in philosophy, the act by which the mind perceives the agreement or disagreement of two ideas, or the truth of propositions, immediately, or the moment they are presented, without the intervention of other ideas, or without reasoning and deduction.

Intussusception, in pathology, the descent of a higher portion of intestine into a lower one: generally of the ileum into the colon. When it takes place downwards, it may be termed *progressive*; when upwards, *retrograde*. — In physiology, the process of nutrition, or the transformation of the components of the blood into the organized substance of the various organs.

Inula. See *Elecampane*.

In'ulin ($C_6H_{10}O_5$), a substance analogous to starch, obtained from the dahlia, artichoke, elecampane, potato, and other plants.

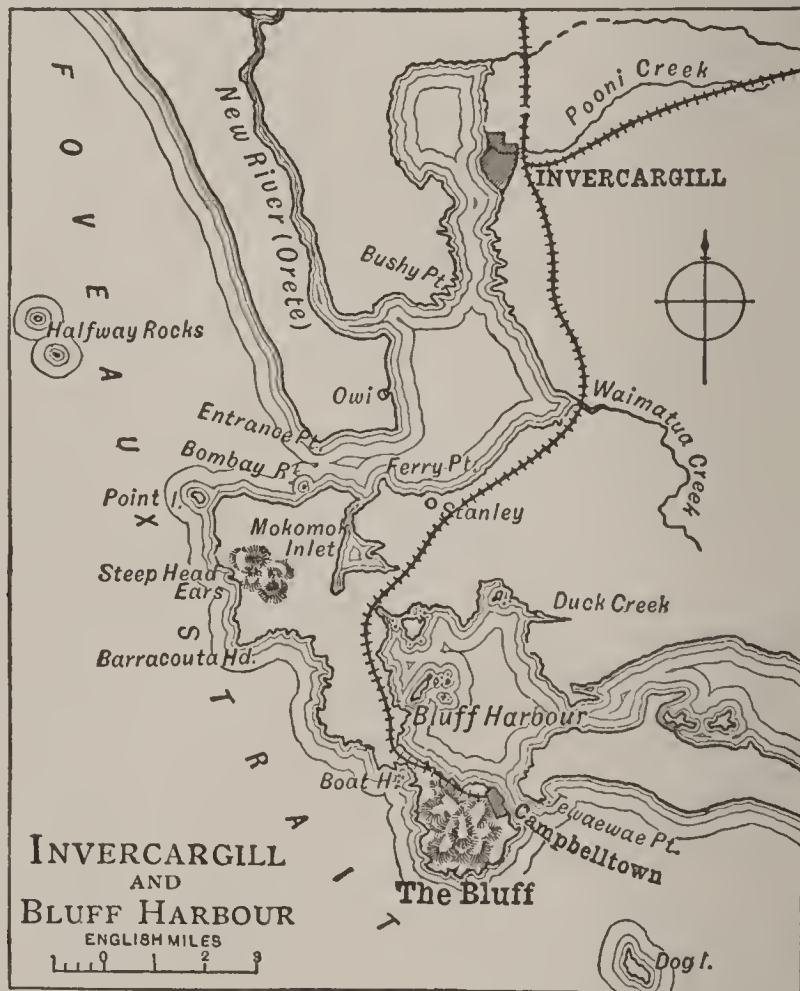
Invalides (an-và-léd), HÔTEL DES, a splendid hospital for disabled soldiers at Paris, in the suburb of St. Germain, erected by Louis XIV. between 1670 and 1673. A soldier must have served ten years to be received into this hospital on account of poverty or infirmity. In vaults under the dome lie the remains of Turenne and several other great French commanders, including those of Napoleon I., deposited here December 15, 1840.

Invention of the Cross. See *Cross*.

In'ventory, a list containing a short description, together with the values, of goods and chattels, made on various occasions, as

on the sale of goods, transfer of movables for pecuniary considerations, decease of a person, &c.

Inveraray (in-vér-ā'ri), a Scotch royal burgh and seaport, capital of the county of Argyle beautifully situated near the head of Loch Fyne, 42 miles north-west of Glasgow; having the castle of the Duke of Argyll, in the immediate vicinity. It unites with Ayr, Campbeltown, &c., in sending a member to parliament. Pop. 940.



Invercargill (-gil'), a town of New Zealand, county of Southland, province of Otago, situated near the mouth of the New River, about 150 miles s.w. of Dunedin. It is well built, and has an athenæum, hospital, public halls, street tramways, breweries, foundries, flour-mills, &c. The surrounding district is pastoral and agricultural. It is connected by rail with the port of Campbelltown 17 miles distant, and situated near the entrance to Bluff Harbour. Here there is excellent accommodation for the largest vessels at all times of the tide. Pop. 8939.

Inverkeithing (-kē'thing), a royal and parliamentary burgh (Stirling district) and seaport of Scotland in Fifeshire. Pop. 1646.

Inverness', a royal, parliamentary, and municipal burgh in Scotland, capital of the county of the same name, and chief town in the Highlands. It is beautifully situated, partly on low ground partly on a gentle acclivity, on both sides of the Ness, about a mile above its confluence with the Moray Firth, near the end of the Caledonian Canal. The town is well built, among the chief edifices being the county buildings, a fine castellated structure, containing the court-house and jail; the town-hall (a new building), the episcopal cathedral, the Highland Club, and the Royal Academy, besides several handsome banks and hotels. The industries include ship-building, rope-making, tanning, distilling, brewing, &c., and there is a considerable trade; there being regular communication by sea and canal with Glasgow, Liverpool, Aberdeen, Leith, &c. Large vessels can unload at the quays. Inverness received a burgh charter from William the Lion in the 12th century, and unites with Forres, Nairn, and Fortrose (the Inverness burghs) in sending a member to parliament. Pop. 19,214.—The county, which is the largest in Scotland, stretches diagonally across the island from sea to sea, and includes on the west the island of Skye, several smaller islands, and all the outer Hebrides, except the north part of Lewis. Area, 4255 square miles, or 2,723,000 acres, of which only about 100,000 are under tillage. Great part of the surface is barren heath, useless except for sporting purposes, but a considerable portion is suited for rearing cattle and sheep. It is divided by Glenmore or the Great Glen of Albyn, which intersects it north-east to south-west, and through which passes the Caledonian Canal, formed by uniting a series of considerable lakes which stretch along the bottom of the valley. The south-west shores of the county are indented with numerous lochs or arms of the sea. The surface generally is mountainous, and presents much fine scenery. Near the south-western extremity of the Caledonian Canal is Ben Nevis, 4406 feet high, the loftiest mountain in Great Britain. The geological structure of the greater part of the county is of crystalline and metamorphic rocks, consisting chiefly of gneiss and mica-slate, with granite, porphyry, and trap rocks. The portion of the county, bordering the Moray Firth, is composed of old red sandstone. The principal rivers are the Spey, Ness, and Beaul, on all of which

there are valuable salmon fisheries. Some of the lakes are of considerable size, and beautifully situated. The largest is Loch Ness, forming part of the Caledonian Canal route. Extensive tracts are held as deer forests, in which the red and roe deer roam at will. The arable and productive land lies chiefly on the sea-coast, and on the banks of the lakes and rivers. Gaelic is the prevailing language. The county sends one member to parliament. Pop. 1891, 88,362.

Invertebra'ta, a collective term for the five great lower divisions or sub-kingdoms of the animal series, which agree in not having a vertebral column or back-bone, used in contradistinction to the highest group of the animal kingdom, to which the name *Vertebrata* or *Vertebrate* animals is given, all of which possess a vertebral column. In the system of Cuvier the Invertebrata were divided into the *Radiata*, *Articulata*, and *Mollusca*. Succeeding naturalists split up Cuvier's *Radiata* into the sub-kingdoms *Protozoa*, *Calenterata*, and *Echinozoa* or *Annuloida*, which with the *Annulosa* and *Mollusca* now form the recognized divisions of the Invertebrate. In Invertebrates no structure analogous to the vertebrate spine is found. Where hard parts exist in them they are generally placed on the outside of the body, and thus constitute an *exo-skeleton*, or outer *skeleton*—as opposed to the *endo-skeleton*, or internal skeleton of the *Vertebrata*. The shell of the crab or lobster is a familiar example. The limbs of Vertebrates are never more than four in number, whilst those of the Invertebrata may be very numerous. Among Vertebrates also reproduction is purely and solely *sexual*; but in Invertebrata *asexual* reproduction is common, many of them reproducing their species by *gemination* or *budding*, and by *fission*.

Inves'titure, in the feudal law, was the open delivery of a fee or fief by a lord to his vassal, thus, by external proof, affording evidence of possession; or the formal introduction of a person into some office or dignity. Investiture was often performed by the presentation of some symbol to the person invested, as a branch of a tree, &c. The investiture of persons with ecclesiastical offices or dignities is historically the most important phase of the subject. The estates and honours which composed the ecclesiastical temporalities were considered to partake of the nature of fiefs, and therefore to require similar investiture from the lord. Charle-

INVOCATION OF SAINTS — IODINE.

magne is said to have introduced this practice, and to have invested the newly-consecrated bishop by placing a ring and crosier in his hands. The custom does not appear to have been opposed during the lapse of two centuries from his reign, but the church at last protested strongly against it. Alexander II. issued a decree against lay investiture in general. This was revived by Gregory VII. (Hildebrand), who, having succeeded in annulling the prerogative of the emperors to nominate or confirm popes, sought to disjoin entirely the ecclesiastical from the civil rule. In 1075 he issued a bull forbidding under penalty of excommunication lay investiture and the enfeoffing of prelates with the ecclesiastical temporalities. Henry IV., emperor of Germany, vigorously resisted the pope, but was (1077) obliged to submit and perform severe penance for his acts of opposition. The struggle then begun with Henry IV. by Gregory was carried on by his successors, and it was not till the papacy of Calixtus II., in 1122, that the question was settled in favour of the pope. By a concordat then arranged at Worms Henry V. resigned for ever all pretence to invest bishops by the ring and crosier, and recognized the freedom of elections: the new bishop, however, was to receive his temporalities by the sceptre. In England Paschal II. was engaged in a contest little less fierce than that with the emperor. Anselm, the primate, refused to do homage to Henry I. for his see. The king asserted an unqualified right of investiture, which the pope as unqualifiedly denied. After a protracted struggle the controversy ended in England, as it did afterwards in Germany, by compromise. Paschal offered to concede the objections against homage provided Henry would forego the ceremony of investiture. To this he agreed (1107).

Invocation of Saints. See *Saints*.

In'voice, an account in writing of the particulars of merchandise transmitted to a purchaser, giving price and quantity, note of charges, and any other needful details. By sending an invoice along with goods a merchant gives official advice to his correspondent of the understood terms of a contract. If the goods are received and the invoice retained this will be held valid evidence in law of the contract.

Involu'cre, in botany, a collection of bracts round a circle of flowers. In umbelliferous plants it consists of separate

narrow bracts placed in a single whorl; in many composite plants these organs are imbricated in several rows. The same name is also given to the covering of the sori of ferns.

In'volute, in geometry, the curve traced by any point of a string when the latter is unwrapped, under tension, from a given curve.



Hemlock Plant. *a*, Involucre.
b b, Involucels.

Involution, the calculation of any power of a quantity, that is, the multiplication of a quantity by itself any number of times. Thus $2 \times 2 \times 2 = 8$; here 8, the third power of 2, is found by involution. *Evolution* is the opposite process.

Io, in Greek mythology, the daughter of Inachus, beloved by Zeus, who, to protect her from the jealousy of Hera (Juno), changed her into a beautiful white heifer.

I'odine (Gr. *ion*, a violet), a peculiar non-metallic elementary solid substance, symbol I; atomic weight 127. It exists in the water of the ocean and mineral springs, in marine molluscos animals, and in seaweeds, from the ashes of which it is chiefly procured (see *Kelp*). It exists also in certain land-plants and in cod-liver oil. It is found in certain minerals, the water of certain rivers, and the rain-water of several towns. At the ordinary temperature of the atmosphere it is a solid crystalline body. It unites readily with chlorine, potassium, &c., with the emission of light and great heat. It is a non-conductor of electricity, and, like oxygen and chlorine, is a negative electric. Like chlorine, it destroys vegetable colours, but with less energy. Its colour is bluish black or grayish black, of a metallic lustre. It is often in scales, resembling those of micaceous iron ore; sometimes in brilliant rhomboidal plates or in elongated octahedrons. The specific gravity of solid iodine is 4.947. At 225° it fuses, and enters into ebullition at 347°. Its vapour is of an exceedingly rich violet colour, a character to which it owes its name. This vapour is remarkably dense, its specific gravity being 8.782. Iodine has a very acrid taste, and its odour resembles that of chlorine. It is an irritant poison; but in

IODOFORM — IONIAN DIALECT.

small doses has been of great service in certain forms of glandular disease. It is largely used in photography, in the preparation of aniline colours, and in other ways. It is chiefly made at Glasgow. It is very sparingly soluble in water, but dissolves copiously in alcohol and in ether, forming dark brown liquids. It possesses strong powers of combination, and forms, with the pure metals, and most of the simple non-metallic substances, compounds which are termed *iodides*. With hydrogen and oxygen it forms *iodic acid*; combined with hydrogen it forms *hydriodic acid*. This is a colourless gas, which strongly reddens litmus, and decomposes many chlorides. Starch is a characteristic test of iodine, forming with it a compound of a deep blue colour. This test is so delicate that a solution of starch dropped into water containing less than a millionth part of iodine is tinged blue by it. The great consumption of iodine is in medicine; it is employed in its pure state, but much more frequently in the form of iodide of potassium, which has been found of great benefit in goitre, scrofula, disease of the liver and spleen, in syphilitic affections, rheumatism, &c., as well as in lead-poisoning. Iodide of iron is another useful medicine, being employed in chlorosis, anæmia, scrofula, and glandular affections.

Iod'oform (CHI_3), a substance analogous to chloroform in composition, but in which iodine replaces chlorine. It is in the form of small, solid yellow crystals, and is prepared by the action of alcohol and other bodies on iodine and potash. It is nearly insoluble in water, but dissolves in ether oils and alcohol. It is used in medicine as an antiseptic, and acts slightly as an anodyne; it is successfully applied to ulcers and sores of various kinds, and is used as a snuff for cold in the head. It may be prepared as an ointment.

I'olite. See *Dichroite*.

I'on, an ancient Greek tragic poet, a native of Chios, who flourished about 450 B.C. His tragedies were represented at Athens with great applause, and he is greatly commended by Aristophanes, Athenæus, &c.

Io'na, an island of Scotland, one of the Inner Hebrides, belonging to the county of Argyle, separated from the south-west extremity of Mull by the Sound of Iona, $1\frac{1}{4}$ mile wide, and about $7\frac{1}{4}$ miles south-west of Staffa. The name is believed to be a misreading of *Iova*, *Ioua*, a name that occurs in old MSS., but the most common ancient

name was *I*, *Y*, *Hy* (or similar forms). It was also commonly called *I-colm-kil* or *I-columb-kill*, that is, 'isle of Columba's cell' or 'isle of Columba of the cell (or church).' It is about 3 miles long by $1\frac{1}{2}$ mile broad; area, 2000 acres, of which 600 acres are under cultivation, the remainder being hill pasture, morass, and rock. It derives its interest from its history and old ruins, the remains of religious establishments of uncertain date, but popularly attributed to Columba, who took up his residence here in 563. They are all, however, of a much more recent date. The principal ruins are those of the cathedral church of St. Mary, of a nunnery, five chapels, and of a building called the Bishop's House. St. Oran's Chapel, as it is called, is supposed to be the most ancient; it is small, being only 60 feet by 20 feet. Attached to it is a burying-ground, in which various kings of Scotland, Ireland, and Norway are said to have found their last resting-place. The most extensive ruin is that of the church of St. Mary, which is cruciform, surmounted at the intersection of the nave and the transept by a square tower of about 70 feet in height. The length of the transept is 70 feet, and that of the body of the church, east to west, 160 feet. The island is now easily reached in summer by steamers daily from Oban. Pop. 243.

Ionía, that part of the seaboard of Asia Minor which was inhabited by Ionian Greeks, a beautiful and fertile country opposite the islands of Samos and Chios, which also belonged to it. According to tradition the Greek colonists came over from Attica about the middle of the 11th century B.C., and founded twelve towns, which, though mutually independent, formed a confederacy for common purposes. These included Phocæa, Ephesus, Miletus, &c., and latterly Smyrna. Commerce, navigation, and agriculture early rendered them wealthy and flourishing, but the country was made tributary by Cræsus, king of Lydia, and later by Cyrus, king of Persia (557 B.C.). With an interval of independence they remained under Persia until this empire was overthrown by Alexander the Great, 334–331 B.C., when they became a part of the Macedonian Empire. Ionía, at a later period, became part of the Roman province of Asia. It was afterwards totally devastated by the Saracens, so that few vestiges of its ancient civilization remain.

Ionian Dialect. See *Greek Language*, under *Greece*,

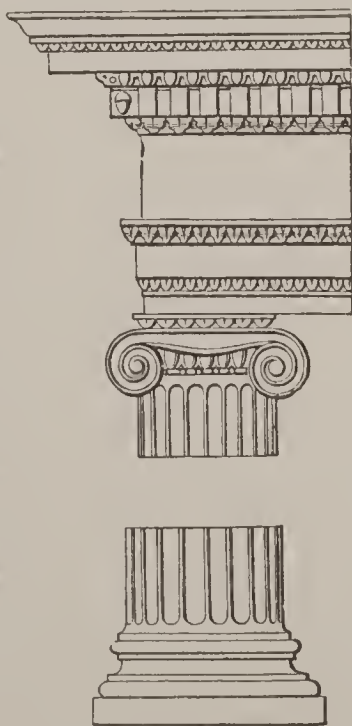
Ionian Islands, a number of Greek islands in the Ionian Sea, extending along the western and southern shores of Greece, of which the largest are Corfu, Cephalonia, Zante, and Cerigo, others being Ithaca or Thiaki, Paxos, and Santa Maura; area, 1097 square miles. All are extremely mountainous; and were it not for the vine, olive, and currant, especially the last, they could support but a small number of inhabitants. The climate is more uniformly temperate and humid than the mainland. The staple exports are oil, currants, valonia, wine, soap, and salt. The few manufactures are chiefly textile and ornamental. The religion is that of the Greek Church. The Ionian Islands often figure in the ancient history of Greece, but only singly. In 1386 Corfu voluntarily surrendered itself to Venice, and soon after the other islands placed themselves under its protection. In 1797 the French became masters. In 1809-10 they were occupied by British troops, and in 1815 the seven islands were formed into a republic, under the protectorate of Great Britain. They were transferred to Greece in 1864. Pop. 244,433.

Ionian Mode, an old ecclesiastical mode or scale represented by the modern scale of C major.

Ionians. See *Greece (History)* and *Ionica*.

Ionian Sea, the ancient name of that part of the Mediterranean which lies between the south part of Italy and Greece.

Ionian Order, one of the orders of classic architecture, the distinguishing characteristic of which is the volutes of its capital. In the *Grecian Ionic* (1) the stylobate consists of three receding equal steps the combined height of which is from four-fifths to a whole diameter; (2) the column, which includes band, shaft, and capital, is rather more than nine diameters in height, the shaft being fluted with twenty-four flutes



Ionian Order—Grecian.

and alternating fillets; while (3) the entablature is rather more than two diameters in height. The volutes are connected on the flanks by a peculiar roll-moulding, called the *baluster* or *bolster*. In the *Roman Ionic*, a modification of the latter style, the stylobate is lofty and not graduated; the shaft diminishes one-tenth of a diameter and has twenty fillets and flutes; the capital, which is two-fifths of a diameter, has its volutes a little lower than the other, and a square abacus with moulded edges covers the whole. The chief examples of the Grecian Ionic are those of the Athenian Acropolis; while those of the Roman Ionic are found in the temple of Fortuna Virilis and the Coliseum at Rome.

Ionian School, the earliest school of Greek philosophy, a school which attempted to explain the phenomena of nature from the forces and attributes of matter itself. It taught the doctrine of the immediate unity of matter and life, according to which matter is by nature endowed with life, and life is inseparably connected with matter. The originator of this school, and indirectly of Greek philosophy in general, was Thales, who flourished about 600 B.C. The other chief philosophers of the school were Anaximander, Anaximenes, Heraclitus, and Anaxagoras. See the separate articles.

Iophon, a son of the great dramatist Sophocles, also a tragic poet. He is said to have gained the second prize in a contest with Euripides and Ion in 428 B.C. Of his plays, fifty in number, only a few lines are extant.

IOU, a written acknowledgment of debt, usually made in this form:—‘To Mr. A. B. IOU Ten Pounds.—C.D. May 12th, 1889.’ An acknowledgment of debt made in this form requires no stamp. It is not negotiable. The letters IOU are of course used instead of the words ‘I owe you.’

Iowa, one of the central United States, bounded on the north by Minnesota; east by Wisconsin and Illinois, from which it is separated by the Mississippi; south by Missouri; and west by Nebraska and Dakota, from which it is separated by the river Missouri; area, 56,025 square miles. It is well watered, its streams being all affluents of the large rivers which bound it on the west and east. To the Mississippi flow the Wapsipinicon, Iowa, Cedar, Skunk, and Des Moines, with a general s.e. course. To the Missouri flow the Big and Little Sioux and other streams. The surface is undulating,

nearly four-fifths consisting of prairies covered with a rich coat of coarse grass, forming excellent pasturage. The climate is very healthy, and winter continues from December to March; the summer heat is tempered by frequent showers. The soil is in general very good, consisting of a deep black mould, intermingled in the prairies with sand, red clay, and gravel. The eastern portion is rich in minerals. Lead is wrought to a considerable extent, and zinc, iron, and coal are found. The coal-fields cover an area of 28,000 sq. miles, and the output by the census of 1890 was 4,061,704 tons. Limestone, gypsum, and clay are abundant. The area occupied by forests and woodland is about 5,000,000 acres. Iowa is a great agricultural state, producing immense quantities of Indian corn, wheat, and oats, and also stands high in regard to dairy farming. Other industries include the manufacture of farm implements, flour-milling, pork-packing, machinery, smelting-works, &c. The length of railways open for traffic is over 8200 miles. It possesses exceptional advantages for river trade, and the smaller streams supply abundant water-power. Education is well attended to. There is a state university (at Iowa City) and a flourishing state agricultural college. The settlement of Iowa began in 1833, when the first purchase of land from the Indians took place; its territorial government was instituted in 1838, and it was admitted into the Union in 1846. The capital is Des Moines; the principal towns being Dubuque, Davenport, Burlington, Council Bluffs, Sioux City, Cedar Rapids, and Keokuk. Pop. 1890, 1,911,896.

Iowa City, a city in the United States, capital of Johnson county, Iowa, on the river Iowa, at the head of the navigation. It contains the state university, and was once the state capital. Pop. 1890, 7016.

Ipecacuan'ha, a substance used in medicine, of a nauseous odour and repulsive bitterish taste, the dried root of several plants of the nat. order Rubiaceæ growing in South America. All the kinds have nearly the same ingredients, but differ in the amount of the active principle which they contain. The best is the annulated, yielded by the *Cephaëlis Ipecacuanha*, a small shrubby plant, a native of Brazil, Colombia, and other parts of South America. When given in very small doses ipecacuanha improves the appetite and digestive powers; in a somewhat larger dose it may be given to increase the

secretion from the mucous membrane of the air-passages; and in a still larger, from 15 to 20 grains, it occasions vomiting. It is also capable, by being combined with other



Ipecacuanha Plant (*Cephaëlis Ipecacuanha*).

substances, of producing increased perspiration, as in the well-known Dover's powder. The name of *American ipecacuanha* is given to the *Euphorbia Ipecacuanha*, a plant which grows in sandy places in North America. It is emetic, purgative, and diaphoretic.

Iphigenia (if-i-je-ni'a), in Greek legend and poetry, daughter of Agamemnon and Clytemnestra. To avert the wrath of Artēmis, whom Agamemnon had enraged by killing a consecrated hind, and who detained the Greek fleet at Aulis that had been prepared for the Trojan war, Iphigenia was to be sacrificed on the altar; but a hart was miraculously substituted for her, and she was conveyed in a cloud to Tauris. She became priestess here to Artēmis, and saved her brother Orestes when on the point of being sacrificed.

Ipomæ'a, a large genus of plants of the nat. order Convolvulaceæ, consisting mostly of twining prostrate herbs, widely distributed in warm regions. The species of most importance is *I. Purga*, which yields the jalap of commerce. See *Jalap*.

Ipsam'bul, **ABUSAM'BUL**, or **ABUSIM'BEL**, a village of Nubia, on the left bank of the Nile; remarkable for containing two of the most perfect and magnificent specimens of Egyptian rock-cut temples existing. The façade of one of them is adorned with several stupendous colossal sitting statues of Rameses II. (the Great), the largest pieces of Egyptian sculpture yet discovered.

Ipsa'ra. See *Psara*.

Ip'sica. See *Modica*.

Ip'sus, small town of Phrygia, Asia Minor, famous for a great battle fought B.C. 301. See *Antigonus*.

Ipswich (ip'sich), a parliamentary and municipal borough and river-port in England, capital of Suffolk, on the Orwell. It

is pleasantly situated on a gentle declivity, and contains many interesting specimens of mediæval architecture. The public buildings include a fine town-hall, a new post-office, a custom-house, county court-house, cavalry barracks, theatre, &c. The industries embrace agricultural implements, machinery, artificial stone, artificial manure, silk, tanning, ropes, lime and cement, brewing, ship-building, &c. Ipswich is a town of great antiquity. It was originally called Gippeswich, from the neighbouring river Gipping. King John gave it its first charter. It sends two members to parliament. Pop. 1891, 57,360.

Iquique (i-kē'kā), a seaport of Chili, province of Tarapacá, recently a fishing village, but now a considerable town with an important trade, its rise being due to the extensive deposits of nitrate of soda and borax, and the silver-mines, &c., in its neighbourhood. It has suffered much from earthquakes, and in 1879 was blockaded, bombarded, and finally captured by Chili.

Irade (i-rā'de), a decree or command of the Sultan of Turkey directed to the grand vizier, whose duty it is to promulgate it to the public.

Irak Aj'emi, an interior province of Persia, separated from the Caspian Sea by Ghilan and Mazanderan; area, about 138,000 sq. miles, a large part of which in the east is occupied by salt deserts, the rest being largely mountainous, with some fine valleys and rich plains. The chief towns are the capital, Teheran, and Ispahan.

Irak Ar'abi, the district lying between the rivers Tigris and Euphrates, at the lower part of their course, corresponding nearly to the ancient Babylonia.

Iran, or ERAN (Old Persian, *Aryana*; Zend, *Airyana*, that is, land of the Aryans), the name given by the ancient Persians to their native land, and still used by the modern Persians, though it is also employed in a wider sense to designate the whole of the country from the Indus to the Tigris, in contradistinction to Turan, the name often employed as synonymous with Turkestan.

Iranian Languages, a family of languages belonging to the Indo-European stock, closely allied to the Indian group, and called by some philologists Persian, from the best-known member of the family. The two oldest known Iranian languages are the Old Persian of the cuneiform inscriptions and the Old Bactrian or Zend, the latter the language in which the Zend-avesta or sacred writings

of the Parsees is composed. The Middle Iranian languages are the Pehlevi, and still later the Parsee, which are preserved in the commentaries to the Zend-avesta. The latter approaches pretty closely to the modern Persian. The most important of the New Iranian languages is the modern Persian, in which has been produced a very rich and celebrated literature. The Afghan or Pushtu, and the dialects of the Kurds, form separate branches of the Iranian family.

Irawadi. See *Irrawaddy*.

Ir'bit, a town in Russia, in the government of Perm, on the frontiers of Siberia, at the confluence of the Irbit and the Niza. It is noted for a great annual fair, held in the month of February. Pop. 4212.

Ireland (in Irish, *Erin*; in Latin, *Hibernia*), the more western and smaller of the two principal islands of which the United Kingdom is composed, is separated from Great Britain on the east by the Irish Sea, and surrounded on all other sides by the North Atlantic Ocean. Measured diagonally, the greatest length, from Mizen Head in the south-west, to Fair Head in the north-east, is 300 miles; and the greatest breadth, from Carnsore Point in the south-east, to Benwee Head in the north-west, is 212 miles; the central breadth, nearly between the bays of Dublin and Galway, is 110 miles. The area is 32,531 square miles. Ireland is divided into the four provinces of Leinster, Ulster, Munster, and Connaught, and into 32 counties. These, with their areas and populations, are given in the table on page 49:

The population in 1841 was 8,175,124; in 1851, 6,552,385, the decrease being partly owing to the famine resulting from the potato disease in 1846-47, and partly to emigration. Since 1851 over 3,000,000 emigrants have left the country. The returned population in 1891 was 4,706,162. The capital is Dublin; the other chief towns are Belfast, Cork, Limerick, and Londonderry.

Surface.—The coast, forming a line of nearly 3000 miles, is, in general, bold and rugged, and is diversified by numerous indentations, some of which run far into the land and form excellent natural harbours. There are a considerable number of islands, chiefly on the west coast, the largest being Achill. The mountains, generally speaking, rise in isolated masses at a short distance from the coast, the interior having the form of a vast plain, in which are extensive tracts of bog. The Macgillcuddy's Reeks, in the south-west, are the highest, the culminating

IRELAND

By Keith Johnston F.R.S.E.

English miles
10 20 30 40

Railways thus —



IRELAND.

summit being Carrantal, 3414 feet. The mountains of Wicklow, in the south-east, reach the height of over 3000 feet (Lugnaquilla is 3039). Rivers are not only numerous but are very equally distributed over

sesses a vast number of lakes (or loughs). Lough Neagh, in the north-east, is a quadrangular expanse 17 miles long by 10 broad, and is the largest lake of the United Kingdom. The other more important lakes are Lough Erne, also in the north; Lough Corrib, in the west, and connected with it by a subterranean channel Lough Mask; Lough Conn, also in the west; and Loughs Allen, Ree, and Derg—the first the commencement, and the other two wide expansions of the Shannon. Besides these there are many others, among which the lakes of Killarney, in the south-west, are pre-eminent for beauty, and attract numerous visitors.

Geology and Minerals.—The mountains are formed of vast masses of primary and metamorphic rocks, while the secondary formations spread over the interior. Basaltic rocks are almost entirely confined to the north-east, where they often form colonnades, of which the Giant's Causeway is a celebrated specimen. Granite has its largest development in the south-east, where it forms the great mass of the mountains of Wicklow. It is more sparingly developed in the west and north-west (Donegal), as well as in the north-east. The lower rocks of the Silurian system form no inconsiderable portion of the whole island, covering large portions of the north-north-east and south-west as well as parts of the west. The Old Red Sandstone has its largest continuous development in the county of Cork, but rises to the surface at numerous isolated spots. The rocks next in the series belong to the Carboniferous system; at the bottom of which lies the Mountain Limestone, the most largely developed of all the rocks of Ireland, occupying almost the whole of the interior. In some cases, particularly in the south-west, the coal-measures occupy considerable areas, but the quality of the coal is generally very inferior, and it is worked only to a very small extent, the yearly output being only about 100,000 tons. The strata higher in the geological series than the coal are very partially developed. Of other minerals than coal Ireland yields small quantities of iron ore, lead ore, slate, alum, salt, &c.

Climate.—The climate is on the whole moister, milder, and more equable than that of the greater part of Britain. It is highly favourable to vegetation, and allows plants to winter in the open air that can do so in very few places in Britain; some species of plants also being peculiar in Ireland alone of the British isles, as for instance the

PROVINCES AND COUNTIES.	Area in sq. m.	Pop. in 1891.
Leinster:—	7,620	1,195,738
Carlow, ...	346	40,899
Dublin, ...	355	429,111
Kildare, ...	654	69,988
Kilkenny, ...	796	87,154
King's County, ...	772	65,408
Longford, ...	421	52,553
Louth, ...	316	70,852
Meath, ...	906	76,616
Queen's County, ...	664	64,639
Westmeath, ...	708	65,028
Wexford, ...	901	111,536
Wicklow, ...	781	61,934
Munster:—	9,481	1,168,994
Clare, ...	1,294	123,859
Cork, ...	2,890	436,641
Kerry, ...	1,853	178,919
Limerick, ...	1,064	158,563
Tipperary, ...	1,659	172,882
Waterford, ...	721	98,130
Ulster:—	8,567	1,617,877
Antrim, ...	1,191	427,968
Armagh, ...	513	143,056
Cavan, ...	746	111,679
Donegal, ...	1,871	185,211
Down, ...	957	266,893
Fermanagh, ...	715	74,037
Londonderry, ...	816	151,666
Monaghan, ...	500	86,089
Tyrone, ...	1,258	171,278
Connaught:—	6,863	723,573
Galway, ...	2,447	214,256
Leitrim, ...	613	78,379
Mayo, ...	2,131	218,406
Roscommon, ...	950	114,194
Sligo, ...	722	98,338
Total, ...	32,531	4,706,162

the surface. The Shannon, in the west, the largest river of Ireland if not of the United Kingdom, is navigable to its source in Lough Allen, forming a waterway of 240 miles. The other rivers of most importance are the Bandon, Lee, Blackwater, Suir, and Barrow, which enter the sea on the south, the last two by the union of their streams forming the broad estuary of Waterford harbour; the Slaney, in the south-east angle, which expands into Wexford Haven; the Liffey and the Boyne, entering the sea on the east, the former having the capital at its mouth, the latter being the largest river which discharges itself into the Irish Sea on the east coast; and the Bann and the Foyle, which have their mouths at no great distance from each other on the north coast. Ireland pos-

IRELAND.

strawberry-tree or arbutus, found in the south-west.

Agriculture.—As regards agriculture Ireland has great advantages, for though there is a great extent of moorland, there is also a vast area of arable surface, covered with a deep friable loam of remarkable richness. Notwithstanding, agriculture on the whole is in a backward state, a result largely due to the smallness of the holdings, and to the evils of overcropping. However, a steady diminution is now taking place in the number of very small holdings. The rearing of live stock and dairy-farming are largely carried on. By far the largest grain crop is oats; the chief green crop is potatoes, which cover an area about one and a half times as large as in Great Britain. Potatoes had become the main food of the people by the end of the 17th century, and a potato famine occurred as early as 1739. Another staple crop, especially in the north, is flax. Much benefit is expected to accrue to Irish agriculture from the operation of the Irish Land Act of 1881, the main provisions of which have been briefly summarized under the terms 'fair rent,' 'fixity of tenure,' and 'free sale.' By the first of these every tenant who objects to his rent or the rent the landlord wishes to exact, is entitled to have a 'fair rent' fixed for him by a court, this rent to remain unaltered for fifteen years. By 'fixity of tenure' the law recognizes that the tenant has a certain right in his holding in virtue of which he is not to be arbitrarily removed from it without compensation, and which enables him on leaving his farm to obtain the best price he can get for yielding up his possession. The 'free sale' of this right of tenancy is restricted only in so far as that it must be to one person only (except under agreement with the landlord), that the landlord may object on sufficient grounds to the person purchasing, and that he also has the right of pre-emption. At the expiration of the fifteen years the landlord may resume possession of the holding on paying the tenant compensation for improvements effected by him, and also paying him the value of his tenant-right, both being determined by the court should the parties be unable to agree. This act, which was largely taken advantage of, has been extended and amended by the Irish Land Act of 1887.

Industries and Trade.—Of industrial employments the linen manufacture is the chief and is in a very flourishing condition.

It has increased in a remarkable manner within the last twenty or thirty years, and Belfast, its centre, has now become the second city of Ireland. The woollen manufacture at the outset outstripped that of linen; but it was hampered by unjust restrictions imposed by parliament at the instance of the woollen manufacturers of England. The brewing of porter and distillation of whisky form important industries. The fisheries employ a considerable number of persons, but far fewer than they should. The salmon fisheries are valuable, and are increasing in value. The trade is only of a moderate bulk. The main articles of export consist of agricultural produce, the greater part of which finds its market in Great Britain. These articles include grain, live stock, salt and fresh meat, eggs, butter, &c. Of manufactured articles linen is the chief export; whisky and porter are also exported. The trade with foreign countries is inconsiderable. The inland trade is much facilitated by the rivers and canals, on the improvement and construction of which respectively large sums have been spent. The railway system, although disproportionate to that of England or of Scotland, has attained a total length of 2650 miles, while Scotland has over 3000.

Religion.—The prevailing religion is the Roman Catholic. The Reformation never made much progress, and though the Protestant Episcopal Church was established by law it was only the church of a small minority. In 1869 an act was passed for its disestablishment. Previously the clergy were supported by a tithe rent-charge, the proceeds of the church lands, &c., but by the new act, taking effect from 1st January, 1871, the property and tithes formerly belonging to the church were vested in commissioners, who had charge of the winding up of the church's financial affairs, and their powers were in 1881 transferred to the Irish Land Commission, who are now engaged in completing the work. Part of the funds thus liberated has been expended on education and the relief of distress. The Irish Church has still a fund of its own, amounting to about £7,300,000, over £3,000,000 of which has been contributed by its friends. Its affairs are now managed by diocesan synods and the general synod in conjunction with a representative body. The supreme legislative powers reside in the general synod, which meets in Dublin, and is composed of the Archbishops of Armagh and

IRELAND.

Dublin and the ten bishops, and of lay and clerical representatives from the different dioceses; the lay representatives being more than twice as numerous as the clerical. The representative body consists of the archbishops and bishops *ex officio*, thirty-six lay and clerical elected members (three for each diocese), and twelve co-opted members elected by the other two classes conjointly. At the head of the Roman Catholic Church are four archbishops, who take the title of Armagh, Dublin, Cashel, and Tuam, and twenty-four bishops. The whole of the Irish Roman Catholic clergy are supported solely by voluntary contributions. The number of priests is 3200, more than half being curates. There are numerous monasteries and convents. The Presbyterian Church is chiefly confined to Ulster, where it may be said, especially in the counties of Down and Antrim, to be the leading religious denomination. Its ministers are supported by voluntary contributions, seat-rents, and church funds. They were formerly aided by an annual grant from government, called the *Regium Donum*, the amount of which, paid in 1869, was £40,547. This grant was abolished by the Irish Church Act of 1869, and was commuted to a single sum of £701,372 paid to the church. According to the census of 1881 there were in Ireland 3,960,891 Roman Catholics, 639,574 Episcopalians, 470,734 Presbyterians, 48,839 Methodists, and 54,268 members of other persuasions.

Education.—The principal educational institutions are Dublin University and the three Queen's Colleges of Belfast, Cork, and Galway. The Queen's Colleges were formerly connected with an examining and degree-conferring body (Queen's University); but for this a similar body, the Royal University of Ireland, was substituted in 1882, £20,000 being yearly granted from the surplus funds of the Irish Church. The Royal College of Science, established in 1867, supplies a complete course of instruction in science applicable to the industrial arts. The Catholic University of Ireland, established in 1854, consists of University College, Dublin, St. Patrick's College, Maynooth, and several other colleges. The seminaries for the education of the Catholic priesthood are numerous, the most prominent being the College of Maynooth, founded in 1795, and formerly receiving annually from government £26,360, for which, by the Irish Church Act of 1869, a sum of

£372,331 was paid in compensation. The General Assembly's Theological College, Belfast, and the Magee College, Londonderry, are Presbyterian colleges. The chief elementary schools are those under the superintendence of the Commissioners of National Education. (See *Britain*.) In 1878 an act was passed setting apart £1,000,000 from the Irish Church surplus fund for the promotion of intermediate secular education by means of special examinations, exhibitions, prizes, &c.

Government.—Ireland, by the Act of Union, became in 1801 an integral part of the United Kingdom, and shares in its legislation by means of twenty-eight representative peers in the House of Lords, and 103 representatives in the House of Commons. The representative peers are elected for life by the whole body of Irish peers. The lord-lieutenant, who represents the sovereign, is the head of the executive, and holds his court in Dublin Castle. He is assisted by a privy-council and a chief-secretary, who takes the most active part in the administration of affairs. As in England the chief legal functionaries are a lord chancellor, a lord chief-justice, and a master of the rolls. The Irish police force is a semi-military body, paid out of the Consolidated Fund.

History.—The beginning of the history of Ireland is enveloped in fable. As in Western Europe generally, the earliest inhabitants are believed to have been of Iberian race, and, therefore, akin to the modern Basques. They were followed by the Celts, different tribes of whom probably arrived at different times, giving rise to such names as Firbolgs, Milesians, &c. Among these the Scots were the latest, and latterly got the upper hand, so that their name became generally applied to all the inhabitants. There is no evidence that the Irish had the use of letters before the middle of the 5th century, when Christianity and Christian literature were introduced by St. Patrick. Subsequently Ireland became the seat of western learning; and its monasteries were the schools whence missionaries proceeded throughout continental Europe. Its internal condition, however, was far from satisfactory. Divided among a number of hostile kings or chiefs, it had been long torn by internal wars, and for nearly two centuries ravaged by the Danes, numbers of whom settled in the country, when, in the beginning of the 11th century, Brian Boróimhé

IRELAND.

united the greater part of the island under his sceptre, restored tranquillity, and subdued the northern invaders.

After the death of Brian at the close of the battle of Clontarf, 1014, gained against the Danes and their Irish allies, the island relapsed into its former state of division and anarchy. In this state of matters Henry II. of England obtained a papal bull giving him the right to subdue it, and the way was paved to this when Dermot, prince of Leinster, who had been driven from the country, was reinstated by the aid of Richard de Clare (Strongbow) and other Norman nobles. In 1172 Henry entered Ireland himself, and partly through the favour of the clergy and his affability, the great princes did homage to him and acknowledged his supremacy. Many Norman barons and their followers now settled in the country, but the English power was far from being established over it. For long only a part was recognized as English territory (generally known as 'the Pale'), and this was governed by various nobles, subject to a viceroy. The nobles quarrelled among themselves, and were very often at open feud. In 1315 Edward Bruce, brother of the Scotch King, landed at the head of a large force, and was crowned king, but was defeated by the English in 1317 near Dundalk. The English power was greatly reduced by this expedition however, and a number of the barons renounced their allegiance to England, and adopted the Irish language, laws, manners, and customs. This led to the passing of the Statute of Kilkenny (1367), forbidding, under severe penalties, intermarriages between English and Irish, the assumption of Irish names by persons of English blood, the use of the Irish language, the native (Brehon) law, &c. But the English rule became so weak that the viceroy found it necessary to protect the Pale by payments of money to the Irish chiefs, and this state of matters long continued. In the reign of Henry VII. (1495) was passed Poyning's Act (so called from Sir Edward Poyning, lord-deputy of Ireland), which provided that all former laws passed in England should be in force in Ireland, and that no Irish parliament, that is the parliament of the English settlers, should be held without previously stating the reasons why it was to be summoned, and the laws it was intended to enact. At the beginning of the 16th century the greater part of the island still remained unconquered by the English. The native Irish lived according to their

old customs under their own chiefs, and in manners and mode of life were still totally uncivilized.

Henry VIII. assumed (by act of the Irish parliament) the title of King of Ireland, instead of *Lord*, which he had before borne as a vassal of the pope, and the Irish chiefs generally acknowledged his authority; but the change of religion was bitterly opposed, and Mary was easily able to undo all that had been done in this direction by her two predecessors. Elizabeth imposed a Protestant clergy upon the people, and her reign was marked by a series of risings, which terminated in the reduction of the whole island. Great stretches were taken from the Irish chiefs, and distributed among English noblemen and others, who were to settle their new estates with English farmers. Little was done in this way, however, compared with the great plantation of the North by James I., under whom 800,000 acres of land in Ulster were declared forfeited, a large part of this being entirely withdrawn from the Irish, and divided among Scotch or English settlers. In 1641 there began an attempt to shake off the English yoke, in which great atrocities were perpetrated on both sides. In 1649 Cromwell was appointed lieutenant, and energetically, but cruelly, reduced the whole country within nine months. The next struggle was that which followed the Revolution, when James II. landed in 1689, and hoped to regain his crown by French and Irish aid. He failed to reduce Londonderry, which held out, enduring the extremity of famine, till it was relieved by some ships from England. In the following year (1690) William III. arrived, and on the 1st of July gained a decisive victory over the forces of James on the Boyne, near Drogheda. In 1691 another victory was gained over the Irish at Aughrim in Galway, and in October Limerick, the last place that held out for James, capitulated, a treaty being concluded at the same time, by which the Catholic Irish were to be allowed the free exercise of their religion. The Treaty of Limerick was ill kept by the English. By a decree of parliament upwards of 1,000,000 acres were confiscated and divided among Protestants. Cruel penal laws were passed against those who adhered to the Catholic religion. The Catholic ecclesiastical dignitaries were banished; the subordinate priests were not allowed to leave their counties; no Catholic could hold a public office, acquire

IRELAND.

landed property, enter into a marriage with a Protestant, &c.

Although these laws were not always rigorously carried out, yet they excited great bitterness of feeling, and produced frequent revolutionary associations (*Whiteboys* and others), which mark the history of Ireland. In 1778 the penal laws against the Catholics, though not repealed, were made much more lenient. Catholics were henceforth permitted to acquire landed property, to erect schools, and to observe their own religion under fewer restrictions. In 1782 Poyning's Act was repealed, and freedom of legislation allowed to the Irish, though Catholics were still excluded from parliament, and did not even have the franchise till 1793. The French revolution had a great effect on the minds of the Irish people, and it was partly through this influence that the Society of United Irishmen was formed, and that rebellion broke out in 1798. Great atrocities were perpetrated, but the rising was speedily crushed. A body of French soldiers, 1500 strong, landed in Killala Bay, but were compelled to surrender.

The British government now resolved to unite the Irish and English parliaments, and an act providing for the legislative union of the two countries passed the Irish parliament in May, 1800, and the British parliament in July of the same year, in virtue of which the union was effected on the 1st of January, 1801. But although this measure bound the destinies of the two countries still more closely, yet it was far from putting an end to the troubles which had so long divided them. In 1829, mainly through the efforts of O'Connell, the Catholic Emancipation act was passed under which Catholics could take a seat in parliament, and were admitted to most public offices. (See *Catholic Emancipation*.) The Irish national party now tried to repeal the Union, for which purpose O'Connell founded the Repeal Association. This movement collapsed in 1843, and afterwards the potato famine in 1845, and again in 1846, cast all other interests into the back-ground. To mitigate this calamity parliament granted enormous sums of money; yet thousands died from starvation, and hundreds of thousands emigrated to America. Anarchical outbursts, agrarian murders, and other acts of violence distracted the land. Meanwhile O'Connell died, and his party was replaced by one still more advanced, called the Young Ireland

party. In these circumstances the French revolution in 1848 had a great effect upon Ireland. The leaders of the Young Ireland party, Smith O'Brien, Mitchel, Duffy, Meagher, and others, entered into relations with the provisional government at Paris, and the people began openly to exercise themselves in the use of arms. But the rebellion turned out a mere fiasco. After the famine and great emigration a general improvement became visible among the inhabitants. Agriculture revived, and the manufacturing industries began to compete with those of England.

The year 1865 witnessed a new conspiracy designed to separate England and Ireland. This originated in the U. States, when the numerous Irish during the civil war in that country hoped for a rupture between it and England, of which they might take advantage. This conspiracy, the members of which called themselves *Fenians* (see *Fenians*), soon spread to Ireland; but before they could take any overt action in that island their design was stifled by the British government (1865-66). The ministry now resolved to do all in their power to render the Irish people loyal and contented; and accordingly the Irish Episcopal Church was disestablished in 1869, and another act was passed to improve the tenure of land, in 1870.

Since 1871 an agitation for what is called Home Rule has made itself prominent. Its chief supporters, designated 'Nationalists,' profess not to desire the severance of Ireland from Britain; what they mainly want, is to have an Irish parliament for matters exclusively Irish. In 1880 Ireland became the scene of an agitation carried on mainly by a body known as the Land League. The movement was so lawless that two special acts, a 'coercion' act and a peace preservation act, were passed. Still further to redress Irish grievances a land act was also passed in 1881, the chief provisions of which have already been mentioned. The Land League was suppressed, but a body called the National League was soon organized in its place. In 1885, 86 Nationalist members (under the leadership of Mr. Parnell) were returned to parliament, and their pressure on the government led to Mr. Gladstone's scheme in 1886 by which Ireland was to receive a parliament of her own and the Irish members to be withdrawn from the Imperial parliament. This and the accompanying scheme for the buying out of

Irish landlords were rejected by parliament and the majority of the constituencies, thus bringing a Conservative government under Lord Salisbury into power. (See *Britain*.) A permanent act for the repression of crime in Ireland was passed in 1887, and an act (Lord Ashbourne's) for the benefit of Irish tenants, under which money is advanced to them to aid them in buying their farms. The agitation by the Home Rule party has continued through 1891 and 1892, Mr. Gladstone advocating eloquently the cause of the Irish people.

Language and Literature. — The Irish language belongs to the Gaelic or Gaedhelic branch of the Celtic stem of languages, being closely akin to the Gaelic of Scotland and the Manx, and more remotely allied to the British dialects (Welsh, Cornish, and Armorice). The modern dialects or varieties of Irish, which differ very much from the ancient, are spoken by the rural classes in Connaught and Munster, and the more remote parts of Ulster. In 1881 there were 64,000 people in Ireland who spoke Irish only, and over 885,000 who could speak it along with English. Gaelic may be considered a comparatively modern form of ancient Irish, which, both linguistically and from the extent and antiquity of its literature, is a far more important language than Gaelic.

Irish literature is rather varied and extensive, including history, legendary and actual, in prose and verse, annals, genealogies and pedigrees, mythological and imaginative tales, lyric poetry, satire, lives of saints, treatises on law, science, grammar, &c. Some of these may be as old as the 5th century of our era. One of the earliest historic pieces is a metrical life of St. Patrick. Among the most important of the heroic tales is the *Táin Bo' Cuailnge* or Cattle Spoil of Cualnge, the centre of a series of epic tales. A certain number of poems and tales, forming a cycle of their own, may be called Ossianic; most of them are comparatively modern. The glosses written to Latin works by Irish ecclesiastics, in the monasteries on the Continent founded during the 7th and 8th centuries, are among the oldest specimens of the language. Many bardic remains belong to the period of the English conquest, but after that date Irish poetry appears to have sunk. Many bards, however, who were still maintained by the native chiefs, helped by their songs to keep up a national feeling hostile to the English domination. The native authorities for Irish history may go

back to St. Patrick at the very earliest. The oldest list of kings dates from the middle of the 11th century. The oldest and by far the ablest annalist, whose works have been at least partially preserved, is Tighernach O'Brian, who belonged to the royal family of the O'Connors of Connaught. He died in 1088. The other chief annals are the *Ulster Annals*, the *Annals of Innisfail*, and the *Annals of the Four Masters* (from its four different compilers). The most important Irish manuscripts are contained in the library of Trinity College, and the Royal Irish Academy, Dublin, in the Bodleian Library, and the British Museum.

Ireland, JOHN, R. C. Bishop, was born in County Kilkenny, Ireland, in 1838. His parents settled in St. Paul, Minn. Since his ordination he has been prominent as a temperance advocate. He was consecrated Bishop of St. Paul, Minn., in 1875. He has been successful as a colonizer in the Northwest; is a good orator and controversialist.

Ireland, WILLIAM HENRY, born in 1777, died 1835. He imposed spurious Shaksperian MSS. upon his father, and also upon other men of letters, and latterly produced two "Shaksperian" plays, *Vortigern* and *Henry II*. The criticisms of Malone led to the exposure of the fraud.

Irenæ'us, SAINT, Bishop of Lyons, a pupil of Polycarp, was probably a native of Smyrna, and born between 120 and 140 A.D. He is generally supposed to have suffered martyrdom at Lyons, in the persecution under Septimius Severus in 202. He actively opposed the Gnostics. Only some fragments remain of his *Libri V. adversus Haereses*, written in Greek. There is, however, a very ancient Latin version.

Irene (ī-rē'nē), Empress of Constantinople, was born at Athens about 752 A.D., and in 769 married Leo IV., after whose death she (780) became regent during the minority of her son Constantine VI. She had during the life of her husband been banished from the imperial palace for her devotion to the worship of images; but in 788 A.D. a council of bishops held at Nice under her auspices restored image-worship in the Eastern Church. When Constantine had grown up he took the reigns of government himself, and reigned alone seven years, when his mother had him arrested and his eyes put out, and he was at last murdered. Irene was the first female who reigned over the

Eastern Empire. She had ordered many nobles into banishment to secure more firmly her power, but Nicephorus, her treasurer, through their influence gained the imperial throne, and exiled her in 802 to the isle of Lesbos, where she died of grief in 803.

Ireton, HENRY, a Parliamentary general, was born in Nottinghamshire in 1610. Descended from a good family, he was brought up to the law; but when the civil contests commenced he joined the Parliamentary army, and by the interest of Cromwell, whose daughter Bridget he married in 1646, he became commissary-general. He commanded the left wing at Naseby, which was defeated by the furious onset of Rupert, and himself made prisoner, but some hours after he recovered his liberty. He was an implacable enemy of the king, had a principal hand in framing the ordinance for his trial, and sat himself as one of the judges. Ireton accompanied Cromwell to Ireland in 1649, and was left by him as lord-deputy. He reduced the natives to obedience with great vigour, but cruelly. He died of the plague before the walls of Limerick, 1651, and was buried in Westminster Abbey 1652.

Iriarte'a, a genus of S. American palms, tall-growing trees, of which one species, *I. exorrhiza*, the pashuiba or paxuiba palm, yields a hard kind of wood used for building, and exported for umbrella handles, &c.

Irida'ceæ, a natural order of endogenous plants, mostly herbaceous, and with equitant leaves (that is, leaves overlapping entirely in a parallel manner), three stamens with extrorse anthers, and an inferior ovary; natives chiefly of the middle parts of Europe and N. America and the Cape Colony. They have beautiful flowers, and include the iris, gladiolus, crocus, ixia, &c.

Irid'ium, a metal of a whitish colour, not malleable, discovered in the black scales which remain when native platinum is dissolved in aqua regia; specific gravity about 22.4, symbol Ir. It takes its name from the variety of colours it exhibits while dissolving in hydrochloric acid. It is the most infusible of metals. It forms a number of alloys, one of which, iridosmine, occurs native. The alloy with gold is malleable and much resembles gold in appearance, that with copper is very hard, pale red in colour, and ductile.

Iridos'mine, IRIDOSMIUM, a native compound of iridium and osmium, forming an osmide of iridium, in which the iridium is

less or more replaced by platinum, rhodium, and ruthenium. It is used for pointing gold pens, and iridium is obtained from it.

I'ris, in Greek mythology, the fleet golden-winged messenger of the Olympian gods. Iris was originally the personification of the rainbow, though she does not appear as such in the Homeric poems. She is represented with wings attached to her shoulders and a herald's staff in her left hand, representative of her office of messenger.

Iris, the muscular curtain stretched vertically in the anterior part of the eye, perforated by and forming the coloured circle around the pupil. See *Eye*.

Iris, a plant that gives name to the natural order Iridaceæ, and is also called flag and flower-de-lis. The plants of the genus *Iris*, some of which are medicinal and others merely ornamental, are found in many localities over Europe, Asia, and America. They usually grow in wet places, bearing flowers of various colours, but the prevailing tint is blue. The common British species, *I. pseudacorus*, has yellow flowers. The stinking iris (*I. fetidissima*) of southern England has purple flowers and ill-smelling leaves. Orris-root consists of the root-stock of some species, as *I. florentina*; and the root-stock of this and other species are cathartic or emetic. Many beautiful species are grown in gardens. The most admired species are the Persian (*I. persica*), the snake's head (*I. tuberosa*), the Chalcedonian, the Spanish, and the English.

Iris, one of the asteroids or planetoids.

Irish Car. See *Jaunting Car*.

Irish Church, Language and Literature, &c. See *Ireland*.

Irish Moss. See *Carrageen*.

Irish Sea, the sea between Great Britain and Ireland, north of St. George's Channel and south of the North Channel, 130 miles long and about 60 miles wide. It contains the islands of Anglesey and Man.

Irish Society, a society formed under James I., by twelve London companies, to colonize the confiscated lands in the north of Ireland, which, when they were thus settled, were named the Ulster plantations. These companies still own much land in Ulster.

Irit'is, inflammation of the iris of the eye. The symptoms of iritis are a zone of a pale pink colour round the cornea, formed by vessels traversing the sclerotic; and the iris itself undergoes a remarkable change of colour. The patient experiences pain

in the orbit of the eye, in the forehead, and side of the head, which frequently grows more intense at night. Iritis may arise from wounds in the iris, from too prolonged continuous use of the eye, or from constitutional predisposition induced by syphilis, scrofula, &c. It may be treated according to circumstances by blood-letting, belladonna, and mercury.

Irkutsk', a town in Southern Siberia, capital of government of same name, at the junction of the Irkut with the Angara, about 40 miles from Lake Baikal. It is the residence of the governor-general of Eastern Siberia, has a cathedral and a number of public buildings, manufactures woollens, linens, leather, &c., and carries on a good trade in tea and other articles imported from China, furs, &c. Pop. 36,117.—The government, which is bounded by Yenisseisk, Yakutsk, Trans-Baikalia, Lake Baikal, and Chinese Turkestan, has an area of 309,190 sq. miles, and a pop. of 398,873, a number of whom are persons banished from Russia.

Iron, the most universally distributed and the most generally applied of all the metals (Lat. *ferrum*; symbol Fe). It is the most tenacious of the metals, having a breaking strain of 106,000 lbs. per sq. inch of section; and two pieces can be perfectly welded together when raised to a white heat. It is so ductile that it can be drawn into wire as fine as the human hair. It occurs chiefly in the earth's crust in combination with oxygen, but it is also found in combination with several other elements, and sometimes, although rarely, *native* or in the metallic state. There are two varieties of native iron, the *telluric* and the *meteoric*. The former occurs in small quantities only, in grains and thin plates, associated with other metals, principally lead and copper. It is of a steel-gray colour. Meteoric iron is a pale steel-gray, very malleable and tough, flexible but not elastic. It has been found in masses in various parts of Europe, Africa, and America, and derives its name from having travelled through the air in the form of meteors, and having been brought to the earth from outside space by the attraction of gravity. All the specimens of meteoric iron analysed contained nickel, most of them also cobalt, besides copper, manganese, and other minerals.

It is from one or other of its *ores* that the iron of commerce is obtained. The ores of iron are very numerous, but the oxides, carbonates, and sulphides are the most im-

portant, and, from the manufacturing point of view, the following are the most valuable:—1. *Magnetic Iron Ore*. This, the richest of all the ores of iron, contains, when perfectly pure, 72·41 per cent of metallic iron. It is iron-black in colour, with a metallic lustre, highly magnetic (especially the specimens of it that are called *native loadstone*), and extremely infusible. It is most commonly found in palæozoic rocks, generally in beds and large masses. Some mountains in Lapland and Chili consist almost entirely of this variety of ironstone. In Sweden it exists in great abundance and purity, and the bar-iron produced from it is much in demand by steel manufacturers. It is plentiful also in Norway and Russia, the East Indies and China, and in North America occurs in beds in granitic mountains in the north-east part of the United States, and in many other tracts. Various parts of Great Britain also possess deposits of magnetic ore. Its specific gravity varies from 4·24 to 5·4. 2. *Hæmatite* or *Specular Iron Ore*, *Red Hæmatite*. This mineral in its purest state contains about 70 per cent of iron. Specular ore is a deep steel-gray in colour, with a brilliant, and often iridescent tarnish externally; its fracture exhibits a brilliant lustre. It is opaque in large fragments, but the edges of small thin scales are of a blood-red colour by transmitted light. It occurs crystalline and lamellar, hard and massive, earthy and friable. This ore is found in the older rocks, especially gneiss and granite, both in beds and veins. Great Britain has vast deposits of hæmatite in Cumberland, Lancashire, Devonshire, and Cornwall, the red ores being chiefly utilized by British smelters. France, Germany, Russia, and North and South America, have large deposits of the crystalline variety. 3. *Brown Iron Ore*, *Brown Hæmatite*. This variety consists essentially of hydrated ferric oxide, and contains when pure about 60 per cent of iron, along with about 16 per cent of combined water. Brown iron ore occurs plentifully in France, Germany, Belgium, and in England, chiefly in the Forest of Dean, in Devonshire, Lincolnshire, and near Durham. Brown hæmatite is generally a yellow powder, sometimes passing into a brown or velvet black. It affords a very malleable and much harder iron than the red ore, and very good steel. Before the blowpipe it blackens and magnetizes, but after calcination and cooling the powder becomes red, and in this state is

IRON.

much used for polishing metals. There are also many varieties of brown hæmatite, to which distinctive names are applied. *Bog iron ore* is a variety of brown hæmatite which occurs in most European countries, and is so named from its being chiefly found in marshy places. It is considered to be of recent formation, and the iron obtained from it can but rarely be used for sheet-iron, and never for wire. 4. *Spathic Iron Ore*. This mineral, as the name implies, resembles rather an earthy than a metallic substance, and consists essentially of ferrous carbonate. In its purest state it contains 48·27 per cent of iron, and occurs in the older rocks and in limestone strata in veins and beds. The chief deposits of this mineral are in Styria and Westphalia, and large deposits exist also in the Pyrenees, in New Grenada, and in Great Britain. This ore is very valuable for making steel, being free from those substances which act injuriously in its manufacture. Spathic ironstone is often associated with considerable quantities of clayey and coaly matter; when the former substance predominates the ore is known as *argillaceous* or *clay-band ironstone*; when the coaly matter is in excess the ore is called *carbonaceous* or *black-band ironstone*. These varieties occur in most of the coal-fields of Great Britain, and supply the greater part of the iron produced there. It is also worked in France at the coal-fields of the Gard, of the Aveyron, and near St. Etienne. In America this ore also occurs, widely distributed. The colour of the clayey carbonates of iron varies from reddish-brown through yellow-brown to dark brownish black. 5. *Iron Pyrites*. This mineral, when pure, consists of 53·33 per cent of iron combined with 46·67 per cent of sulphur, and is the most widely distributed of all the ores of iron. It occurs in many forms disseminated in rocks, veins, and beds, investing other minerals, sometimes inclosed in them. The ordinary colour is brass-yellow, but owing to decomposition often assumes grayish and brownish tints. Before the blowpipe it melts, giving out a sulphurous odour, and leaving a blackish slag, which is magnetic. This ironstone is chiefly used as a source of sulphur, but in Siberia it is worked for the small percentage of gold it contains.

Before the ores pass into the smelter's hands they are subjected to the preliminary process of *calcination* or *roasting*. The object of this operation is to separate water, carbonic acid, sulphur, and other volatiliz-

able substances from the ore, and at the same time to render the ore more porous. This is now generally effected by placing the ironstone over a coal-fire at the bottom of a kiln; when the ore is red-hot a fresh layer, 8 or 9 inches in depth and mixed with coal, is added, and so on until the kiln is filled. When the bottom layer is cold it can be withdrawn, and the process thus becomes continuous. Formerly ores were roasted in piles in the open air, but this wasteful and irregular method is now only resorted to in localities where time and fuel are of little consideration. Ironstone loses from 25 to 30 per cent of its weight by calcination, the black-band variety, which almost supplies its own fuel, from 40 to 50 per cent.

The *smelting* of the iron is the next process, that is, the production of the metallic iron from the ore. The iron-smelter must carefully consider the nature of the ores to be treated, and the due admixture of different varieties; the most suitable fuel; the production and maintenance of a high and even temperature; and he must also select such materials to mix with the ores as shall form with the non-essential constituents of the ironstone a slag which shall remove all hurtful ingredients, being so liquid as to float on the surface of the molten iron and flow easily from it. The most advantageous combination of ores can only be determined by experience, but as regards fuel there is generally no choice. Until the beginning of the 17th century charcoal was exclusively used for iron-smelting, but coal and coke have now taken its place, except in those countries where forests still abound and charcoal can be procured readily and cheaply. Chief among iron-smelting appliances is the blast-furnace, and the great progress made in the production of pig-iron during the past 30 years is largely due to better constructed furnaces. In those of the most recent type the waste gases of the furnace are utilized for raising heat and steam, with a consequent large saving in fuel, and the residual or by-products which were formerly lost are also collected, all tending to reduce cost of manufacture. (See *Blast-furnace*.) The molten iron, as it runs from the furnace, is conducted along channels excavated in strong binding sand into moulds of the same material, in which it solidifies, forming what is known as *pigs*. For casting purposes the pig-iron is generally melted in a special furnace, called a cupola furnace. This apparatus consists of a cylindrically-shaped fur-

IRON.

nace, varying from 7 to 10 feet high, and having an internal diameter of about $3\frac{1}{2}$ feet; in such a furnace 5 tons of iron may be melted. The furnace is composed of thick iron plates strongly riveted together, protected inwardly by a layer of binding sand about 9 inches thick, the whole being lined with fire-clay bricks. See *Casting*.

To obtain *malleable* or *wrought iron*, it is necessary to free the pig-iron from the sulphur, phosphorus, silicon, and excess of carbon it contains, as these substances lessen the tenacity of the iron, and render it unfit for rolling into bars or plates. But a small quantity of carbon (under 1 per cent) is essential to the formation of good malleable iron; perfectly pure iron would be too soft. The means by which the elimination of foreign materials from, but retention of a small amount of carbon in, the iron are accomplished are partial oxidation of the iron, succeeded by the removal of the foreign substances in the form of oxides, partly by volatilization and partly by combination with the already oxidized iron in the form of slag. This is done by the process of *puddling*. Formerly the iron-puddler submitted the pig-iron to a refining process previous to passing it into the puddling-furnace, but since the introduction of Danks' and other furnaces, and the substitution of machine for hand-labour, this preliminary process has been generally abandoned. In the ordinary puddling-furnace there is a hearth, on which the pig-iron is placed, and a grate separated from it, in which the fuel is placed. In this furnace the iron is subjected to a great heat, but it is only the heated gases that are allowed to play upon the metal, the shape of the furnace being designed to throw the heated gases down on to the surface of the molten mass on the hearth. In the furnace there is a suitable aperture through which the puddler thrusts his rake or *rabble*, and so stirs up the metal, thus assisting in the process of oxidation. When the iron is sufficiently purified the puddler works it together into balls or *blooms* weighing each about 60 lbs. When the whole of the metal has been collected into blooms the door of the furnace is closed, and the temperature is raised to a full welding heat. The blooms are then carried to a powerful squeezer or to a steam-hammer. The melted slag is thus forced out of the ball, which is at the same time welded into a compact mass of metal, ready to go through the *puddling rolls*, which consist of grooved

iron cylinders. These cylinders revolve in opposite directions, so that the metal in passing through them is powerfully compressed, whereby any slag remaining in it is squeezed out. The iron while still hot is cut into pieces by a pair of shears, which pieces are bound together by wire, and subjected to the operation of *re-heating* or passing through the *mill-furnace*. The bars are heated to a welding temperature, then again passed through the rolling-mill, whereby they are converted into a single bar. This bar may be again bent upon itself and again rolled, thereby producing what is known as *best bar* or *wire iron*. This iron is very tough and tenacious: it may be bent or even tied in a knot when cold without exhibiting the least sign of fracture. If iron breaks off when bent in a cold state it is said to be *cold-short*; while if it stands this treatment, but becomes brittle at a high temperature so as to be unfitted for welding, it is called *red-* or *hot-short*. The presence of foreign elements influences these two properties of iron in a marked degree; thus a very small amount of sulphur, even such a quantity as .05 per cent, causes bar-iron to become red-short. Bar-iron possesses a specific gravity varying from 7.3 to 7.9. The melting point is estimated at being about 2900° Fahr., and of cast-iron 1920° Fahr.

By the Siemens regenerative and other similarly constructed furnaces, malleable iron and steel are now prepared directly from the ore. In recent years 'malleable castings' have been introduced. The castings are made of ordinary cast-iron, and rendered malleable by the removal of the carbon. In large cast-iron pots the castings are laid with alternating layers of powdered red hæmatite, and the whole is kept at a temperature of about 1650° Fahr., or cherry-red heat, for 72 hours. On cooling, the castings are found to consist of nearly pure iron, and to be perfectly malleable, and, therefore, workable.

If iron is heated frequently or carelessly, it ceases to be fibrous and loses its tenacity; it is then said to be *burnt*. To restore it to its original condition, a fresh and very careful forging is generally needed. This may also be done by heating the piece of iron to bright redness, and plunging it into a boiling saturated solution of sea-salt until it is of the same temperature, about 230° Fahr. After this operation the metal can be easily doubled in the cold.

It is not always easy to draw the line between iron and steel, and many varieties

IRON — IRON-CLAD VESSELS.

of metal come into the market under the name of steel which in reality are alloys of iron with other metals, such as wolfram, manganese, chrome, &c. It is admitted by all metallurgists that one of the characteristics of true steel is that it hardens when heated and then suddenly cooled in water; but wolfram steel, for instance, exhibits the very opposite property. Experienced workmen can distinguish iron from steel by the musical note emitted on striking. A more certain method consists in treating the metal with diluted nitric or sulphuric acid. If the surface remains unaltered, or nearly so, when touched with a drop of either acid, the metal is iron; in the case of steel a black mark will be left, owing to the liberation of carbon.

Pure iron is a silver white metal, with a strong lustre, very tenacious, capable of receiving a high polish, and so soft as to be easily cut with a knife. It may be obtained by heating nitride of iron in a stream of hydrogen, or by electrolytic precipitation; but, according to Matthiessen, however metallic iron is obtained it always contains a trace of sulphur. In its chemical analogies iron is closely related to the metals cobalt, nickel, and chromium; it belongs to the hexad group of metals, and forms a large series of salts. The atomic weight of iron is 55.9 or 56. Iron dissolves slowly in dilute nitric acid; if not diluted, this acid rapidly oxidizes it. Dilute sulphuric acid dissolves this metal easily, but if concentrated, it has no action in the cold, whereas, on heating to ebullition, the iron is dissolved with evolution of sulphurous acid gas. Iron is also dissolved in hydrochloric acid and in aqua regia.

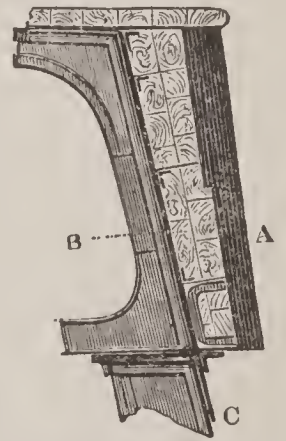
The principal iron manufacturing countries are Great Britain, the United States, Germany, France, and Belgium. The production of all classes of pig iron for 1889 in Great Britain amounted to 8,322,824 tons (in 1837 about 1 million), partly from ore imported. The production in the United States in 1890 was 10,307,028 tons; that of Germany, 4,563,025. For the manner in which iron is converted into steel, see *Steel*.

Besides its numerous other uses, iron is of great value medicinally, especially as a tonic and restorative of the blood. Hence it is very efficacious in anæmia and chlorosis, in rickets and scrofula, and in convalescence from various illnesses. In neuralgia it is often beneficial, and especially

when given along with quinine. Some of its preparations have a styptic or astringent effect. It is given in many forms, as the carbonate, citrate, sulphate, perchloride, &c. Mineral waters often owe their useful properties to iron, being then known as chalybeate springs.

Iron-bark (*Eucalyptus resinifera*, one of the 'gum-trees'), an Australian tree growing to the height of 100-150 feet, with heavy, strong, and durable timber, difficult to work and apt to be 'shaky.'

Iron-clad Vessels, or **ARMOUR-CLAD VESSELS**, a term now applied to all vessels protected from the fire of heavy guns by thick plates of iron or steel, usually backed by wood. The iron-clad is comparatively a modern invention, and it was not until 1859 that Britain began to introduce such vessels into her navy; but since that time greater changes have taken place in the construction of war-ships than in all previous ages. Before the present century we have no record of vessels being fortified with iron plates, and the idea was first practically applied to some floating batteries by the French in the Crimean war. The improved shells played such havoc in the crowded 'tween decks of the line-of-battle ships then in use, that some extra protection became absolutely necessary. The first iron-clad, *La Gloire*, was constructed by the French in 1858,



A, Iron plating. B, Teak backing. C, Ship's side.

a wooden ship sheathed from end to end in $4\frac{1}{2}$ -in. iron plates, an armour then considered invulnerable. It was evident that Britain must not only take up the idea of the French, but also improve upon it, and this led to a period of unexampled activity in the naval yards of both countries. No sooner had France launched an iron-clad than Britain replied with another, although the former managed to keep the lead for some years. The first British iron-clad, the *Warrior*, was launched in the Thames in December 1860, an iron frigate with airtight compartments, $4\frac{1}{2}$ -in. iron armour and 18-in. wood backing, the two ends of the vessel unprotected. The French continued to build their vessels of wood for some years, while the British started at once with

IRON-CLAD VESSELS.

iron, which gave the advantage of extra lightness for the same strength. Iron-clads may be divided into the three chief classes of broadside, turret, and barbette vessels. *La Gloire* and the *Warrior* carried their guns on the broadside like old wooden frigates, but as the number of guns carried was reduced as ordnance grew heavier, and all-round firing was found expedient, it was deemed necessary to limit the masses of armour by applying it to the most vulnerable parts only, and adopting various methods for attaining all-round firing. This

brought about an entire new departure in ship-building—the construction of *turret ships*, or ships having a revolving covered turret or turrets rising above the deck and containing the chief guns, the turrets being of great strength, and having openings for the muzzles of the guns. The turret-ship is the invention of Ericsson in 1861–64 for the U. States navy, and the advantage of his system was fully demonstrated in the successful conflict of the turret-ship *Monitor* with the broadside-ship *Merrimac*, in the American civil war. Representatives of Bri-

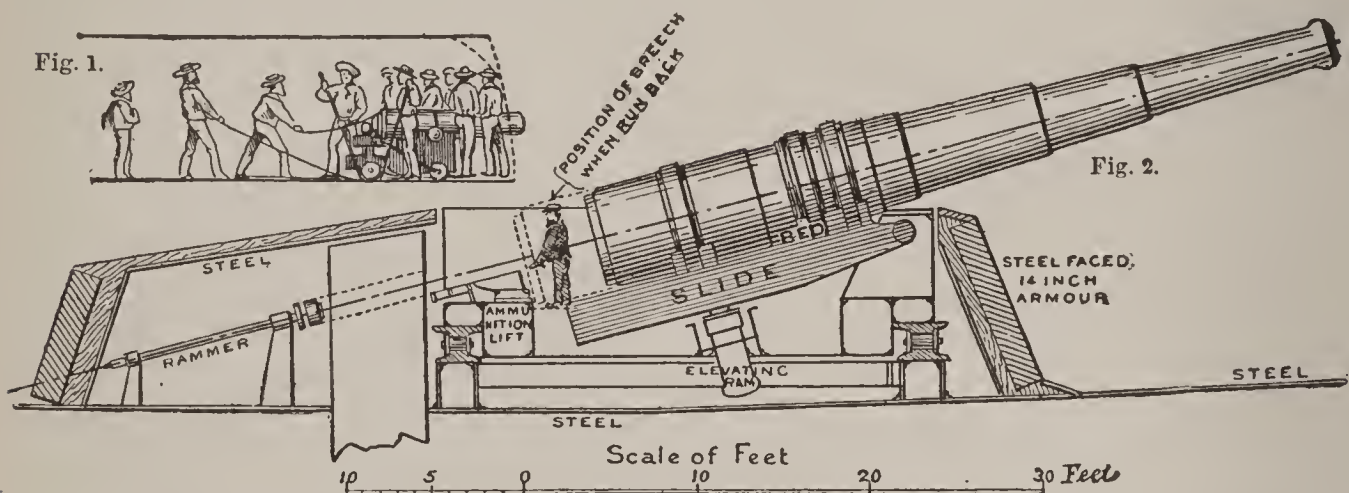


Fig. 1.—Largest Ship's Gun in year 1837. Fig. 2.—111-ton Gun of the *Benbow*. Both Guns drawn to same scale. From the *Naval Annual*.

tish sea-going turret-ships are the *Inflexible*, *Ajax*, *Sans Pareil*, *Victoria*, *Trafalgar*, and *Nile*. Ships on the *barbette* system have open towers or turrets rising above the deck, containing heavy guns which fire over the edge of the turrets (thus giving an extensive range), the guns in some cases being raised to fire and lowered to load so as in the latter case to be protected. The barbette type was a French introduction, and its principal advantage is the height at which guns can be carried above water-line, not, however, without a considerable exposure of guns and crew. The *Benbow*, *Rodney*, *Howe*, and *Camperdown* are good British representatives of this system, these being also members of what is known as the 'admiral' class, a common feature of which is steel-faced 18-in. side armour and a central citadel having two barbette towers. The manner in which the armour is distributed varies greatly in different ships. In the *Inflexible* (to which the *Agamemnon* and *Ajax* are similar) only a portion of the ship is armour-plated, a part of its bulk being merely intended to float and move the iron citadel, which forms the most important fea-

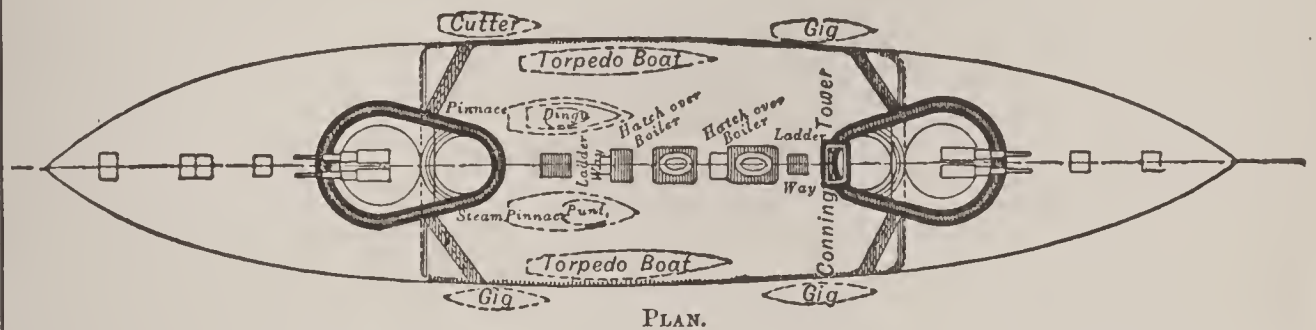
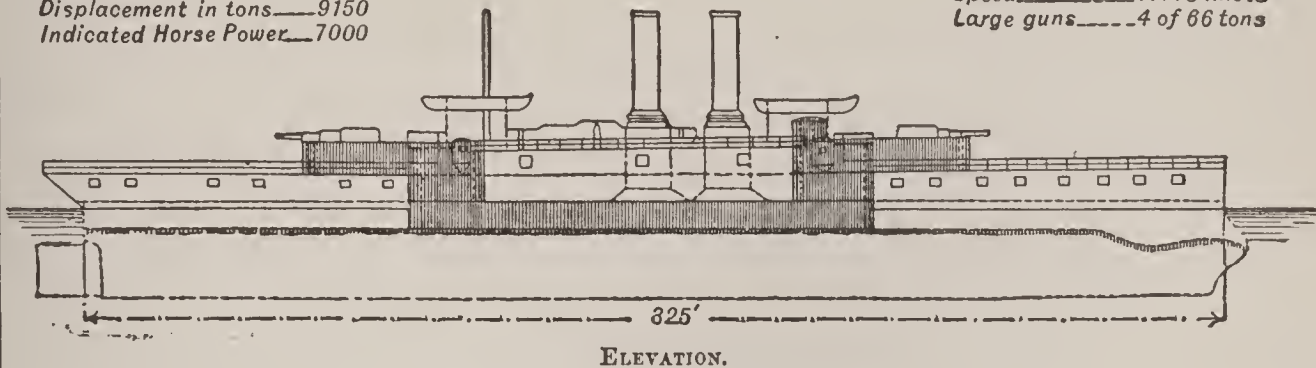
ture of the vessel. This is a rectangular armoured castle 110 feet in length, 75 feet in breadth, and 15½ feet in height, 6½ feet being below and the rest above the water. Within this are inclosed the engines and boilers, the base of the ponderous iron turrets, the hydraulic loading-gear, and the magazines. The walls have a uniform thickness of 41 inches, and consist of armour-plates varying in thickness from 16 inches to 24 inches, with strong teak backing between and behind the plates, the backing varying in thickness inversely to the thickness of the plating. In the central part of the citadel rise the two turrets 12 feet high and 28 feet in internal diameter, of iron of the thickness of 18 inches. In each turret are two 81-ton guns. Nearly every armour-clad vessel is fitted with some sort of ram; the ram being a more important feature in some than in others. The *Polyphemus* is entirely a torpedo ram, this ship being a deeply immersed steel tube with a convex deck rising a short distance above the water, the bow forming a ram and containing a tube for projecting torpedoes. Among the most advanced specimens of naval construc-

H.M.S. COLLINGWOOD.

Also on slightly different dimensions—HOWE, RODNEY, ANSON, and CAMPERDOWN.

Length_____325'.0"
Breadth_____68'.0"
Displacement in tons_____9150
Indicated Horse Power_____7000

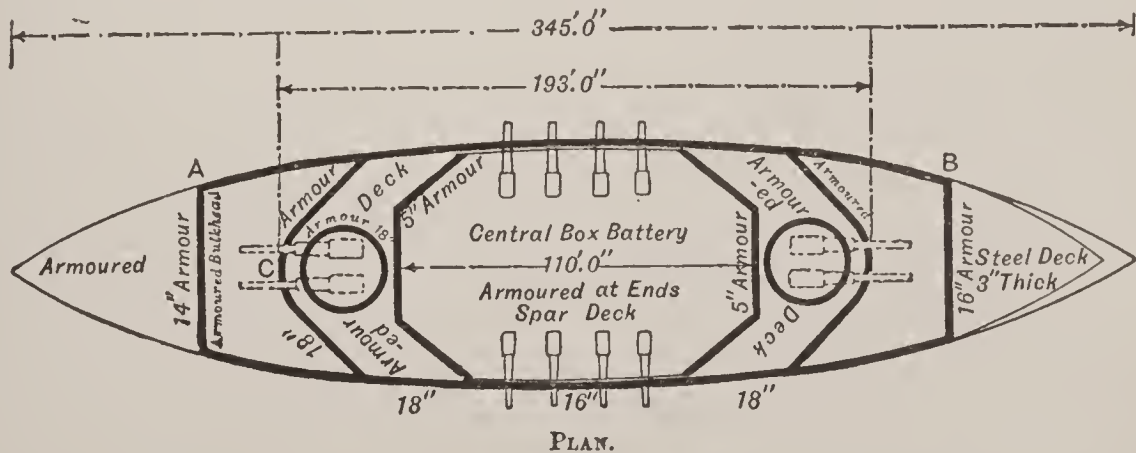
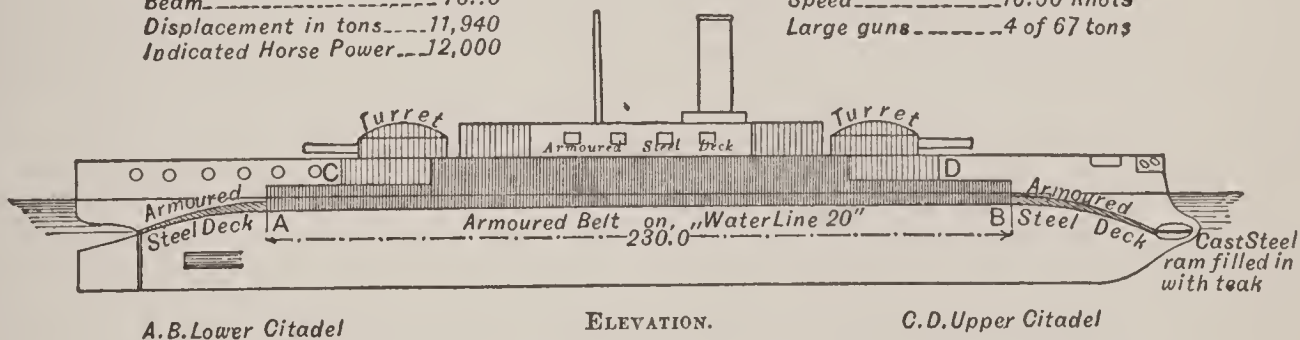
Armour_____18 in.
Speed_____17.43 Knots
Large guns_____4 of 66 tons



H.M.S. TRAFALGAR (1887) AND NILE (1888).

Length_____345'.0"
Beam_____73'.0"
Displacement in tons_____11,940
Indicated Horse Power_____12,000

Armour_____18 in.
Speed_____16.50 Knots
Large guns_____4 of 67 tons



tion at present are believed to be the sister ships *Trafalgar*, launched 1887, and *Nile*, 1888. These are turret-vessels, with a displacement of 11,940 tons, and are now the largest in the British navy, and probably the best equipped in the world. They have a steel armour of 20 in. in a belt extending almost the length of the ship on either side, 16 to 18 in. on citadel, 18 on the turrets, while a 3-in. steel deck covers the vital parts fore and aft. Each of them has no less than 76 separate steam or hydraulic engines, including propelling machinery, and carries four 67-ton breech-loading guns. They cost nearly a million sterling each. More useful in many respects than these huge vessels are smaller cruisers of great speed and coal-carrying capacity. Six of these, all 5000-tonners, were launched in 1887, and others since. Two first-class cruisers, the *Blake* and the *Blenheim*, are of 9000 tons and 20,000 horse-power, with a speed of 22 knots. According to the admiralty programme adopted in 1889, eight first-class battle-ships are to be speedily built, with a displacement of 14,000 tons each, and a speed of $17\frac{1}{2}$ knots; also two second-class battle-ships, and forty-two armoured cruisers. As to the best material for armour-plates, it is not yet decided whether solid steel or steel-faced armour is preferable; excellent results have been obtained with composite-plates, composed of steel and iron in layers. Since protective armour has come into use the number of guns carried by a war-ship has been greatly reduced, while the size and weight of the guns has immensely increased. Modern first-class war-ships have usually two or four very large guns for the turrets or central citadel and six or eight smaller (but still large guns) for the sides, besides machine-guns.

Next to Great Britain, France has the greatest number of iron-clads, Italy, Russia, and United States ranking third, fourth, and fifth respectively as maritime powers. The French, combined with either of these three fleets would outnumber the British fleet. Italy has the distinction of possessing the two largest iron-clads in the world. The *Italia* and *Lepanto* have a displacement of 13,835 tons, with a speed of 17 knots. According to a statement of the First Lord of the Admiralty, Britain in 1889 was 30 to 40 per cent stronger than the next strongest naval power; her relative position is probably stronger since.

The United States, after long delay, is coming into the front rank as to the power and improved armament of its naval vessels. In 1888-90 were built seven first-class armoured vessels, of steel and iron, from 3800 to 9000 tons each, capable of a speed of twelve to eighteen knots an hour. Twenty-four iron-clads are now (1893) in commission, and four being built.

Iron Cross, a German, originally a Prussian, military order instituted in 1813 by Frederick William III.

Iron Crown, a golden crown set with precious stones, with which anciently the kings of Italy, and afterwards the German emperors, were crowned, when the latter assumed the character of kings of Lombardy or Italy. It has received the above name from an iron circle in it, forged, according to tradition, from a nail of the cross of Christ. It was worn by Charlemagne, by Charles V., and by Napoleon I.

Iron Gate, a narrow part in the course of the Danube below where it leaves Austrian territory and becomes the boundary between Servia and Roumania.

Iron Hat, a headpiece of iron somewhat hat-shaped, worn as armour from the 12th to the 17th century.

Iron Mask, THE MAN WITH THE, an unknown personage kept in various French prisons, who for a long time excited much curiosity. All that is known of him is that he was above middle height, of a fine and noble figure, and delicate brownish skin; that he had a pleasant voice, was well educated, and fond of reading and guitar playing, and that he died in the Bastille 1703. The mask he wore seems to have been of black velvet, not iron. Conjecture has given him many names. He was stated to be in turn the Count of Vermandois (a natural son of Louis XIV. and De la Vallière), the Duke of Beaufort, the Duke of Monmouth, the son of Anne of Austria (mother of Louis XIV.) by some favourite, and twin-brother of Louis XIV., but all these assertions have been unable to stand the test of thorough investigation. What seems most probable is that he was Count Girolamo Matthioli, first minister of the Duke of Mantua, who had betrayed the interests of Louis XIV. by failing to secure for him, as he had pledged himself to do, in consideration of a large bribe, possession of the fortress of Casale, which gave access to the whole of Lombardy. For this offence the court of Versailles lured him to the French

IRON MOUNTAIN — IRRIGATION.

frontier, secretly arrested and imprisoned him in the fortress of Pignerolo. The secret was preserved so carefully, on the supposition that Matthioli was the ill-fated prisoner, because his seizure and detention were flagrant violations of international law.

Iron Mountain, a city in Menominee co., Mich., was organized in 1888 from part of Breitung township. Pop. 1890, 8599.

Irons, shackles, fetters, or bilboes for the feet, especially such as are used on board ship.

Iron-stone, a general name for ores of iron, or for some of them, as the argillaceous carbonate or clay iron-stone.

Iron-ton, a city of Ohio, U.S., on the river Ohio, 140 miles above Cincinnati, the centre of an iron-producing district. Pop. 10,939.

Iron-wood, a name given to various trees from the quality of their timber. The iron-wood or hop-hornbeam of America (*Ostrya virginica*), nat. order Cupuliferæ, is a tree with a trunk not exceeding 6 in. in diameter, with very hard wood, so heavy that it sinks in water, and foliage resembling that of birch. The species of the genus *Sideroxylon*, known as iron-wood, are natives of the tropics and also of New Zealand, the Cape, &c. The *S. inerme*, or smooth iron-wood of the Cape, has long been cultivated in the greenhouses of Europe. *Diospyros Ebenum* (theebony) is also named iron-wood, as is the *Metrosideros vera* of Java.

Ironwood, Gogebic co., Mich. Pop. 1890, 7745.

Irony (Gr. *eirōneia*, dissimulation), a form of speech in which the meaning intended to be conveyed is contrary to the natural meaning of the words. Irony, as a rhetorical device, becomes a most effective weapon for ridiculing an antagonist. Some of the Athenian orators were great masters of this refined mode of derision.

Iroquois (i'ro-kwə), the joint name given by the French to a once powerful confederacy of six North American Indian tribes (Mohawks, Oneidas, Senecas, &c.). They formerly resided on the Mohawk River, and extended their conquests to the Mississippi, and beyond the St. Lawrence. It is probable that but for the settlement of the whites they would have secured dominion from Canada to the Gulf of Mexico. Some of the tribes are now extinct; some have made considerable advances in civilization, while others have fallen into a state of squalid misery. Part of the Canadian Indians are Iroquois.

Irradiation, that effect on the eye through which brilliantly illuminated white surfaces and self-luminous bodies, when emitting white light, appear to the eye much larger than they really are.

Irrational Quantities, or **SURDS**, are quantities which we cannot exactly determine, because they cannot be expressed in terms of a primary unit. Thus $\sqrt{2}$ is an irrational quantity, being equal to 1.4142... with an indefinite number of decimals. The ratio of the circumference of a circle to its diameter is an irrational quantity, 3.14159...

Irrawad'dy, **IRAWADI**, a large river traversing Lower and Upper Burmah from north to south, falling into the Indian Ocean by various mouths and forming a great delta. Its source has not been traced, but it may be placed in East Tibet. The Irrawaddy is the main artery of Burmah, the bulk of the trade is carried on by its means, the valleys through which it flows are the most fertile and populous, and on its banks are the principal towns (Mandalay, Ava, &c.), with Rangoon and Bassein on two of its mouths. The width of the river varies from 200 yards above Ava to 1 to 4 miles towards its delta, and the total length is estimated at 1200 miles. It is navigable for steamers of 5 feet draught as far as Bhamo near the Chinese frontier, 900 miles from its mouth. The Irrawaddy Flotilla Co. possess a large number of steamers specially constructed for the navigation of this river.

Irreden'tists, the members of a political organization called *Italia Irredenta* (un-liberated Italy), the object of which is to recover all territory formerly belonging to Italy and still under foreign yoke. The agitation is principally directed against Austria, and is most actively carried on at Trieste.

Irrigation, the art of increasing the productiveness of soils by the artificial supply of water to them. This is as old as agriculture, and references to it exist in very early records, especially in Egypt, India, and China. In countries with very small rainfall, and subject to droughts, agriculture without irrigation would be uncertain and unprofitable. For this reason the British government has promoted extensive irrigation works in India, and, although financially a loss, they are a great boon to the agricultural population, and do much to avert those famines, which were once so common amongst them. In Sind 80 per cent of the cultivated area is irrigated, in

the N. W. Provinces and Oudh 32 per cent. The greatest irrigation-work is the Ganges Canal, 445 m. long. In the south of Europe, particularly in Italy and Spain, irrigation works of a high order have existed from ancient times, and it is supposed that the Romans introduced similar works into Britain, where it is extensively practised in some parts especially for the growing of grass. In California and elsewhere in the western states and territories of America, it is largely employed for crops also, of various kinds. The water not only supplies the moisture so necessary to vegetation, but it fertilizes the soil by furnishing such mineral constituents as salts of potash and soda, sulphates of lime, soluble silica, &c., all of which act on the soil, especially if the water be rich in them, like a dressing of bone-manure. Sewage water is more valuable than pure water, from the large amount of putrefied animal and vegetable matter it carries, and the drainage of many towns finds thus profitable application. There are various systems of distributing the water in irrigation to suit the special requirements of different surfaces, positions, and uses of land.

Irritability, that function of a nerve or muscle in virtue of which it responds to certain stimuli, or that property in plants by which stimuli cause movements, as in the sensitive-plant.

Ir'tish, a large river of Northern Asia, rises in the Altai Mountains in Chinese territory, forms Lake Zaisan, then flows N.N.W. through Asiatic Russia, and after a course of 1800 miles falls into the Obi. It receives the waters of several important rivers, and has important sturgeon fisheries.

Ir'vine, a royal and parliamentary burgh and seaport of Scotland, in Ayrshire, on the Irvine, 24 miles south-west of Glasgow. It has a good harbour, and there are chemical works (for explosives, &c.), engineering, foundry, and ship-building works. Pop. 8498.

Irving, EDWARD, the founder of the sect called Irvingites, was born August, 1792, at Annan, Dumfriesshire; died at Glasgow, December, 1834. After a good education at Annan he went in 1805 to the University of Edinburgh, and having entered the ministry of the Established Church, he was appointed in 1819 assistant to the celebrated Dr. Chalmers in Glasgow. In 1822 he became minister of the Caledonian Asylum Chapel, a Presbyterian place of worship in London. His impressive eloquence, combined with singularity of appearance, and

his mannerisms, soon brought him into notice, and for a time the great as well as the fashionable flocked to hear him. In 1823 he published a work called *For the Oracles of God*, Four Orations, which sold extensively. About two years later he wrote an *Introductory Essay to Bishop Horne's Commentary on the Book of Psalms*, considered one of the best products of his pen. His theological peculiarities were well set forth in a collection of *Sermons, Lectures, and Occasional Discourses*, 3 vols., issued at London in 1828. These attracted much attention, and brought him shortly afterwards into conflict with the presbytery, with the result, that in 1832 he was dispossessed of his living in London, and in 1833 the presbytery of Annan, which had licensed him, deposed him from the ministry. He was charged with holding Christ guilty of original and actual sin, and denying the doctrines of atonement, satisfaction, imputation, and substitution. He was a believer in the speedy coming of Christ, and held that miraculous gifts of apostolic times had not ceased to be bestowed on the Christian Church. An excellent biography of Irving was written by Mrs. Oliphant. See *Irvingites*.

Irving, HENRY (originally John Henry Brodribb), an English actor, born in 1838. He was for a time a clerk in London, but adopted the theatrical profession, his first appearance being at Sunderland in 1856. After playing for nearly three years in Edinburgh he appeared at the Princess's Theatre, London, in 1859. After a short stay here, and a few months in Glasgow, he went to Manchester, where he remained for five or six years. Having returned to London in 1866 he took part in the *Belle's Stratagem*, *Hunted Down*, *Uncle Dick's Darling*, &c.; but his first marked success was as Digby Grant in *Albery's Two Roses* (in 1870), which was followed by his powerful impersonation of Mathias in *The Bells* (founded on Erckmann-Chatrian's *Polish Jew*). His next noteworthy parts were Charles I., Eugene Aram, and Richelieu, in the plays so named. In 1874, at the Lyceum Theatre, he sustained the part of Hamlet so successfully as to raise himself to the first place among English actors. His chief Shaksperian parts subsequently played are *Macbeth*, *Othello*, and *Richard III.* In 1878 he leased the Lyceum Theatre for himself, and has since put on the stage in excellent style *Othello*, *The Merchant of*

Venice, *Much Ado About Nothing*, *Romeo and Juliet*, *Twelfth Night*, *Faust*, *Macbeth*, &c., playing in them the principal character along with Miss Ellen Terry. His appearances in the provinces have been equally successful with those in London, and he has met with equal favour in his repeated visits to the United States. He has contributed a few papers to the magazines on subjects connected with his art, and has delivered addresses at Oxford and Harvard Universities.

Irving, WASHINGTON, one of the best American writers, born in New York 3d April, 1783; died 28th November, 1859, at Sunnyside, on the Hudson. He was the son of a Scotsman who had emigrated to New York before the Revolution, and had become a merchant of some standing. He was educated for the legal profession, but his tastes were in the direction of literature, and already in 1802 his *Letters of Jonathan Oldstyle* appeared in the *New York Morning Chronicle*. Shortly afterwards, being threatened with pulmonary disease, he sailed for Europe, visited most continental countries, and did not return to America until March, 1806. In the same year he was called to the New York bar. His pen was now very busy, and his sketches of Dutch character, in his *Knickerbocker's History of New York*, which made its appearance in December, 1809, proved him possessed of quaint and genial humour to a high degree. About this time he joined his two brothers as a sleeping partner in a mercantile venture, and in 1815 he visited England. The failure of his brothers' business made him resolve to follow literature as a profession, and he settled in London. A series of papers which he now wrote, entitled *The Sketch-book*, first published at New York, 1818, met with such success that an enlarged edition was published in London two years later. For seventeen years until 1832 Irving resided in Europe, principally in England, France, and Spain. This was a period of great literary activity, and brought forth some of his most famous works, such as *Bracebridge Hall*, *The Tales of a Traveller*, and *The Life of Columbus*, for which 1000, 1500, and 3000 guineas respectively were paid him by the publishers. He also acted for a time as secretary to the American Embassy in London, and the University of Oxford honoured him in 1831 with the degree of D.C.L. Having returned to New York in the spring of 1832 he ac-

companied the expedition for the removal of the Indian tribes beyond the Mississippi, and collected the material for his *Tour on the Prairies*, published in 1835. From 1842 to 1846 he acted as United States ambassador at Madrid, and on his return in that year he retired to his country-seat at Sunnyside. His biography of Oliver Goldsmith, Mahomet and his Successors, and the *Life of Washington* (1855-56) occupied his last years. Other works of his are: *The Conquest of Granada*, *Tales of the Alhambra*, *Legends of the Conquest of Spain*, *Voyages of the Companions of Columbus*, *Adventures of Captain Bonneville*, and *Astoria*. His famous story of *Rip van Winkle* belongs to the *Sketch-book*.

Irvingites, a name given to believers in, and followers of, Edward Irving, forming a sect properly designated as the Catholic Apostolic Church. They have a considerable number of churches in the United Kingdom, and a few unimportant congregations exist also in Germany, France, Switzerland, Canada, and the United States. Their chief distinguishing feature is the belief in a revival of the spiritual gifts of the first ages of the church, such as speaking in 'unknown tongues,' and prophesying. In their constitution, which they claim to be a development of the primitive church, they adopted the fourfold ministry of 'apostles, prophets, evangelists, and pastors and teachers' (Eph. iv. 11). Two years after Irving's death the number of apostles had been completed to twelve. They recognize all Christian communities, and embody in their ritual portions of those used in different sections of the church, including the Roman and Greek Catholic. The ministry is supported by tithes. The second coming of Christ is a subject of sanguine hope to all the members.

Irwan. See *Erivan*.

Isaac (Heb. 'he will laugh'), one of the Hebrew patriarchs, the son of Abraham by Sarah, so called to denote the *laughter* and *gladness* occasioned by his birth. He is remarkable as the offspring of very old age, Sarah being ninety and Abraham a hundred years old at the time of his birth; for his miraculous escape from death as a burnt-offering; and for the fraud perpetrated upon him, at his wife Rebecca's instigation, by his son Jacob, to the injury of Esau. He died at Hebron 180 years old, and was buried in the cave of Machpelah, the resting-place of Sarah and Abraham, and of Rebecca.

Isaac I., COMNENUS, Emperor of Constantinople, raised to the throne in 1057. He brought about great reforms in the administration of the empire, and repelled an inroad of the Hungarians, but abdicated in favour of Constantine Ducas in 1059, and retired to a convent, where he died in 1061.

Isabella, wife of Edward II. of England. See *Edward II.*

Isabella of Castile, daughter of King John II. of Castile and Leon, consort of Ferdinand the Catholic, was born 1451, married 1469, and died 1504. She was a woman of great charms, courage, and sagacity, and contributed no small share to the many remarkable events of the reign of Ferdinand V., including the introduction of the inquisition, 1480, the discovery of America by Columbus, 1492, and the final expulsion of the Moors after the conquest of Granada.

Isabella II., ex-queen of Spain, daughter of Ferdinand III., was born in 1830, and succeeded her father three years after, her mother being appointed queen-regent. The early years of her reign were disturbed by a rising in favour of her uncle, Don Carlos, who, if the Salic law had not been set aside, would have ascended the throne instead of her; but this was finally quelled in 1839. She was declared of age in 1843, and in 1846 was married to her cousin, Don Francisco d'Assisi. Her reign was so despotic that a revolution took place in 1868, which drove her from the country. She resigned her claims to the crown in favour of her son Alfonso, who ascended the throne in 1875. She lives sometimes in Spain, sometimes in Paris.

Isæ'us, an Athenian orator, who lived between 420 and 348 B.C. He was a pupil of Lysias and Isocrates, and, like them, became a teacher of eloquence and writer of orations, chiefly judicial. Eleven of his orations are extant. His style is clear, forcible, and concise.

Isaiah (Heb. *Yeshayahu*, Salvation of Jehovah), the first of the great Hebrew prophets. He began his predictions in the last years of Uzziah's reign. Of his father, Amoz, we know nothing, and of the circumstances of his life but little. We know, however, that he had great influence over the kings and people of Judah, and he is supposed to have died at a good old age at Jerusalem, at the beginning of Manasseh's reign. The first portion of the writings that pass under his name consists chiefly of de-

clarations of sins and threatenings of judgments, while the last 27 chapters, together with some previous ones, hold out promises of a glorious future for Israel. The style throughout is clear and simple, yet dignified and sublime in the highest degree. His authorship of the last 27 chapters is denied by some eminent critics, who unite in ascribing them to a later prophet, perhaps also called Isaiah, while others believe that the name Isaiah stands for a school of prophets; but the integrity of the book has still many able defenders.

Isar (ē'zâr), a European river which rises in Tyrol, about 6 miles N.E. Innsbruck, enters Bavaria, flows past Munich, and latterly joins the Danube; course above 190 miles.

I'satis, the genus of plants to which woad belongs.

Isau'ria, in ancient geography, a country in Asia Minor, bordering on Lycaonia, Phrygia, Pisidia, Cilicia, and Pamphylia. Its capital, Isaura, was destroyed by the Romans.

Ischia (is'ki-à), an island of Italy, 26 square miles in extent, in the Gulf of Naples, with beautiful scenery and a fertile soil, producing excellent wine and fruits. It is entirely volcanic in character, and is noted for its warm mineral springs and volcanic convulsions. In 1881 and 1883 earthquakes caused great loss of life and property. Several shocks have been experienced since, but without disastrous results. The capital, Ischia, with some 7000 inhabitants, is a favourite resort of tourists in Italy. Other towns are Casamicciola and Forio, both of which suffered severely in 1883. Pop. 30,000.

Ischium (is'ki-um), the inferior posterior part of the pelvic arch in vertebrates, a part of the hip-bone.

Ischl (ē'shl), a fashionable watering-place in Upper Austria, on the Traun, 50 miles S.W. of Linz, celebrated for its salt baths. The Austrian emperor has a residence in the neighbourhood. Pop. 2200.

Iseo (ē-sā'ō), or SABINO, a picturesque lake in Upper Italy, between Brescia and Bergamo, and formed by the waters of the Oglio; length 15 miles, average breadth 6 miles.

Isère (ē-sār), a river which rises in Italy, crosses Savoy, enters France by the department of Isère, to which it gives its name, and joins the Rhone 5 miles above Valence; length about 190 miles, of which nearly 90 are navigable.

Isère, a department of South-eastern France; area, 3185 square miles. It is generally mountainous, the highest summit being Le Grand Pelvoux, 13,158 feet. The whole department belongs to the basin of the Rhone, which drains great part of it directly, the only other important river being the Isère. The soil is generally fertile, and produces abundant cereal and leguminous crops; the vine and mulberry being also cultivated. Lead, copper, and iron are found in considerable quantities; also coal, marble, slate, granite, and porphyry, and the iron-mines employ a number of blast-furnaces. There are numerous paper, silk, and cotton mills. Grenoble is the capital. Pop. 1891, 572,145.

Iserlohn (ē'zēr-lōn), a town of Prussia, province of Westphalia, with manufactures in brass, bronze, tin, and iron, cutlery, zinc and iron furnaces, &c. Pop. 21,516.

Iser'nia (Latin, *Æsernia*), an episcopal city of South Italy, on a spur of the Apennines, province Campobasso. Pop. 8931.

Ishim, a river of Western Siberia, a tributary of the Irtysh.

Ishmael (Hebrew, *Yishmael*, whom God hears), the son of Abraham by Hagar. He married an Egyptian wife, and had twelve sons and one daughter, who became the wife of Esau. He died when 137 years old. It was predicted that he was to become 'a great nation,' and the Arabs, especially the Bedouins, are often regarded as descendants of Ishmael.

Ishmaelites, **ISHMEELITES**, the descendants of Ishmael. See *Ishmael*.

Ishmaelites, **ISMAELITES**, or **ISMAELIANS**, a Mohammedan sect originating in the 1st century of the Hegira, and deriving its name from Ishmael or Ismael, one of Ali's descendants. From the 8th to the 12th century they were powerful in the East, and distributed themselves over Irak, Syria, Persia, and Egypt.

Ishpeming, Marquette co., Mich., 15 m. N. W. of Marquette; extensive iron mines, with very best ore. Pop. 1890, 11,197.

I'sidore, the name of three Spanish ecclesiastics, of whom the most famous was Isidore of Seville, who flourished at the beginning of the 7th century. He was the most profound scholar, the most eloquent orator, and the ablest prelate of his age and country, and consequently exercised a powerful influence over the development of Latin Christianity. He was made bishop of Seville in 600 or 601, presided over the Councils of

Seville, 619, and Toledo, 633; and died at Seville 636. Several of his works, which embrace divinity, history, philosophy, &c., were translated into English as early as the middle of the 16th century.

Isidorian Decretals, a spurious collection of decretals belonging to the 9th century, which were for a long period regarded as authentic. See *Decretals*.

Isinglass, a gelatinous substance, of which the best kind is prepared from the swimming-bladder or sound of the sturgeon, dried and cut into fine shreds, while the American article is obtained from the same part in the cod, hake, &c. It is the basis of the Russian glue, which is preferred to all other kinds for strength. A test solution is also prepared from it, by means of which tannic acid may be distinguished and separated from gallic acid, the former giving it a yellowish-white precipitate. Isinglass boiled in milk forms a nutritious jelly, and a solution in water, with a very small proportion of some balsam, spread on black silk, is the court plaster of the shops. It is also used in fining sherries and other white wines, and in making mock-pearls, stiffening linens, silks, gauzes, &c. With brandy it forms a cement for porcelain and glass.

I'sis, the principal goddess of the Egyptians, the sister and wife of Osiris, representing the moon, as Osiris did the sun. The Egyptians believed that Isis first taught them agriculture, and as the Greeks offered the first ears gathered to Ceres, so did the Egyptians to Isis. She is represented under various forms. In one representation she has the form of a woman, with the horns of a cow, as the cow was sacred to her. She is also known by the attributes of the *lotus* on her head, and the *sistrum* in her hand, a musical instrument which the Egyptians used in the worship of the gods. She is often accompanied by her infant son Horus. In one celebrated Egyptian statue she was shown with her face veiled. She was particularly worshipped in Memphis, but at a later



Isis.

period throughout all Egypt. From Egypt her worship passed over to Greece and Rome, and the abuses which it occasioned at Rome caused its frequent prohibition there. It was, however, repeatedly revived. The Romans never considered the worship, which was introduced among them by Sulla (B.C. 86), altogether reputable, and its attendant immorality was vigorously lashed in the satire of Juvenal.

Isis, a kind of coral, popularly known as *Mare's-tail* coral, from its likeness to the plant of that name (*Hippuris*). It is found chiefly in the Indian Seas, in the Pacific Ocean, and on the coasts of America.

Isis, the upper part of the river Thames, before its junction with the Thame.

Iskan'deroon, or ISKENDEROON. See *Alexandretta*.

Isla, JOSÉ FRANCISCO DE, born at Segovia 1714, died at Bologna 1783, a Spanish satirist after the model of Cervantes. His fame rests principally upon his *History of Fray Gerundio*, a satire on the monks of his time, a book which fell under the ban of the Inquisition. He translated *Gil Blas* into Spanish.

Isla de Pinos ('Isle of Pines'), an island lying south of the western portion of Cuba, to which it belongs, 40 miles by 34, with good pastures and valuable timber.

Islam (is-lām'), that is complete resignation and submission to the will of God, is the name given in Arabic to the religion originated by Mohammed. The fundamental doctrine of Islamism, and the only one it is necessary to profess to be a Moslem, is expressed in the common formula of faith: 'There is no God but Allah, and Mohammed is his prophet,' to which the Shiahs or Shiites, that is the majority of Persian and Indian Moslems, add 'and Ali is the vicar of God.' See *Mohammedanism*.

Island, a portion of land entirely surrounded by water, and smaller in size than the great masses of land known as continents. Islands are of all sizes, from mere dots of land or rock in the sea to a great mass like Australia, which is often spoken of as a continent. Islands are divided into two distinct classes: *continental* islands, lying in proximity to continents, and *pelagic* or *oceanic*, from their position in the oceans. Continental islands occur along the margin of the continents, and are generally of the same geological structure. Pelagic islands are mostly of volcanic or coral formation. A cluster of islands, such as the West In-

dies, the Canaries, the Hebrides, &c., are called an *archipelago*.

Islands of the Blessed, according to the Grecian mythology, islands which were supposed to lie westward in the ocean, where the favourites of Zeus, snatched from death, lived in perpetual happiness.

Islay (ī'lā), an island of Scotland, one of the Inner Hebrides, forming part of Argyleshire, and separated by the Sound of Islay from the island of Jura. It is 25 miles long by 17 miles broad; area, 150,000 acres. The coast is mostly bold and rocky, and the north and east of the island are hilly. There are extensive fertile tracts under tillage, producing good crops of grain, turnips, and potatoes. Cattle, sheep, horses, cheese, butter, and other agricultural produce are exported, as also large quantities of whisky, which are sent chiefly to Glasgow. Pop. 7559.

Islay (is'li), a seaport of Peru. Pop. about 2000.

Isle of France. See *Mauritius*.

Isle of Man. See *Man*.

Isle of Pines, a small island in the Pacific, south-east of New Caledonia, and forming a dependency of it.

Isle of Wight. See *Wight*.

Is'lington, a district in the north of London, since 1885 a parl. borough returning four members. Pop. 1891, 319,433.

Ismaelites, a Mohammedan sect. See *Ishmaelites*.

Ismail (is'mā-il), a town in the south of Russia, gov. of Bessarabia, on the north arm of the Danube, 35 miles E. of the Roumanian port Galatz, and about 40 from the embouchure of the Danube in the Black Sea. It was destroyed by Suwarrow in 1790, and since then has been alternately governed by Turkey and Russia, ultimately falling under the dominion of the latter by the Treaty of Berlin in 1878. It has recently made rapid strides, both architecturally and commercially, and is now an important market for wool, hides and leather, corn, and tallow. Pop. 28,000.

Ismailia (is-mā-ē'lē-ā), a small town in Egypt, on the salt lake Timsah, on the route of the Suez Canal, and at the outlet of a branch of the fresh-water canal (from the Nile to Suez), 46 miles south of Port Said. It arose during the making of the Suez Canal, and was the headquarters of the Canal Company. Pop. 2000.

Ismid, IZMID, a town of Asia Minor, on the Sea of Marmora, seat of a Greek metro-

politan and an Armenian archbishop. It represents the ancient Nicomedia. Pop. 15,000.

Isnik. See *Nicæa*.

Isobar'ic Lines, lines drawn on a map or globe through all places where the barometer is at the same height at a certain time. Telegraphic communication enables these lines to be drawn with some accuracy.

Isocheimal Lines. See *Isothermal Lines*.

Isoc'hronism (Gr. *isos*, equal, *chronos*, time), the property by which a pendulum, or a balance-wheel, or an oscillating particle (as of air) conveying sound vibrates through longer or shorter arcs in the same time (or nearly so). Given a certain length of spring, all the vibrations, large or small, are isochronous. If the spring is shortened the large vibrations take place quicker than the short ones; if, on the contrary, the spring is lengthened, the small arcs are performed quicker than the large ones. For small oscillations a pendulum is almost exactly isochronous, but it is only with the cycloidal pendulum that perfect isochronism is obtained.

Isoclinic Lines. See *Isogonic Lines*.

Isoc'rates, an ancient Greek orator, born at Athens 436 B.C. He spoke seldom in public; but he prepared orations for others, and trained many able orators, among his pupils being Isæus, Hyperides, Lycurgus, &c. His patriotism was sincere, and his desire for the freedom of Greece so intense, that he starved himself to death in his ninety-eighth year from grief at the unhappy battle of Cheronæa. He was master of a graceful literary prose style, but was accused of being too florid and of carrying elaboration too far, his periods being formed with endless labour. Twenty-one of his orations are still extant.

Isogon'ic Lines, lines drawn on a map through all places where the declination of the magnetic needle is the same. *Isoclinic lines* are drawn through places where the inclination or dip of a magnetic needle is the same; the zero isoclinic line (drawn through places where there is no dip) is called the magnetic equator.

Isöla Bella, one of the Borromean Islands in Lake Maggiore. See *Borromean Islands*.

Isöla Grossa, a long, narrow island in the Adriatic, on the coast of Dalmatia.

Isöla Madre, one of the Borromean Islands (which see).

Isom'erism (Gr. *isos*, equal, *meros*, a part),

literally equality of parts, a chemical term first applied by Berzelius in the case of bodies, which, although identical in composition, that is, as regards number and nature of atoms, have nevertheless different chemical properties. It is supposed to be due to different grouping of the atoms of each molecule, or to the varying amount of energy employed in its formation.

Isomorph'ism (Gr. *isos*, equal, *morphē*, form; that is, 'equality in form'), is the phenomenon observed where chemical bodies composed of different elements, but equal in atomic quantity and combination, affect the same crystalline form. It was formerly supposed that every substance had its own peculiar crystalline form. Mitscherlich, however, showed that certain elements or groups of elements may replace one another without altering the crystalline form of the compound.

Isonan'dra, a genus of plants, order Sapotaceæ, one species of which, *I. gutta*, is known as the gutta-percha tree.

Isoperimet'rical, in geometry, a term applied to figures which have equal circumferences or perimeters.

Isop'oda (Greek, *isos*, equal; *pous*, *podos*, foot), an order of crustaceans having sessile eyes and a depressed body; the thoracic and abdominal rings free, except the first thoracic, which is united with the head. The feet are of equal size and move in the same direction. The Isopoda vary widely in habits; some, like the woodlice, are terrestrial, and inhabit damp situations, such as under stones, and moss, and under the bark of trees; others live as parasites on fishes, and in the gill-chambers or on the outer surface of shrimps, crayfish, and other higher crustaceans; and whilst some forms are exclusively marine, others inhabit fresh water.

Isother'mal Lines, lines drawn on a map or globe through places which have the same mean annual temperature. (See *Climate*.) *Isothermal* lines are drawn through places having the same mean temperature during the hottest month of the year. *Isocheimal* or *Isocheimal* lines are drawn through places having the same mean temperature during the coldest month in the year.

Ispahan (is-pä-hän') or ISFAHAN, a very ancient city of Persia, and for centuries its capital, in the province of Irak-Ajemi, on the river Zendarud, 210 miles south of Teheran, the present Persian capital. It was once one of the most important and mag-

nificent cities in the East, but little is now left of its former splendour, the largest part of the city being in ruins. The manufactures are still extensive, however, including trinkets, firearms, sword-blades, glass,



Mosque of Sultan Hussein, Isfahan.

earthenware, artistic brasswork, woollens, cottons, velvet, and satin. Much opium is grown in the neighbourhood, as also tobacco, madder, &c., forming important articles of trade. Isfahan is the emporium of the inland commerce of Persia. Pop. 90,000.

Israel and ISRAELITES. See *Jews*.

Issik-kul, Issyk-kul, a lake of Central Asia, in the Russian prov. of Semirechensk, south of Lake Balkhash, about 110 miles long by 36 broad, with brackish water abounding in fish. It receives many streams, but is gradually decreasing in size.

Issoire (is-wär), a French town, department of Puy-de-Dôme, 19 miles S.S.E. from the departmental capital, Clermont. Manufactures articles in copper, and has numerous oil-mills. Pop. 6405.

Issoudun (is-ö-dün), a French town, department of Indre, 17 miles N.E. of the departmental capital, Châteauroux. It has manufactures of steam-engines, agricultural implements, woollens, cottons, &c. Pop. 14,630.

Issue, in law, the point or matter depending in a suit on which two parties join and

put their cause to trial. It is a single, definite, and material point issuing out of the allegations of the parties, and consisting regularly of an affirmative and negative. It is either an *issue in law* to be determined by the court, or *in fact* to be ascertained by a jury.

Issus, anciently a town of Cilicia, in Asia Minor, on the Gulf of Issus. Here Alexander of Macedon gained a complete victory over Darius (B.C. 333).

Issy, a suburban quarter in the southwest of Paris, with a strong fort.

Istambol. See *Constantinople*.

Istar, the ancient Babylonian god of war and destruction.

Isthmian Games, public games of ancient Greece, so called because they were celebrated on the Isthmus of Corinth, and having a similar character to the Olympian, Nemean, and Pythian games. The Greeks in general took part in them, and the principal exercises were boxing, wrestling, foot, horse, and chariot races, and throwing the discus. They were celebrated in April and May, in the first and third year of each Olympiad, and the victors were rewarded with wreaths of pine leaves. The origin of these games was lost in antiquity, but they were generally regarded as originated in honour of Poseidōn (Neptune). See *Games*.

Isthmus, in geography, a neck of land by which two continents are connected, or a peninsula is united to the mainland. Such are the *Isthmus* of Panama, connecting North and South America; the *Isthmus* of Corinth, connecting the Morea with Northern Greece.

Is'tria, a peninsula of triangular form, projecting into the north-east corner of the Adriatic Sea, part of the Austro-Hungarian Dominions. The surface is mountainous, particularly in the north. The soil is generally thin and gravelly; but the forests, which are extensive, yield excellent timber, and the vine, olive, and mulberry are successfully cultivated. Area, 1900 square miles. Pop. 292,006.

Italy, a kingdom in Southern Europe, consisting in the main of a large peninsula, having a singular resemblance to a boot in shape, stretching southwards into the Mediterranean, but also including a considerable portion of the mainland and the islands of Sicily, Sardinia, Elba, Ischia, Lipari Islands, &c. It is bounded on the north and north-west by the Alps, which separate it from Austria, Switzerland, and France, and on



ITALY.

the north-east by Austria; elsewhere it is washed by the Mediterranean, or the Adriatic, an arm of the latter. The area is about 114,000 square miles. For administrative purposes it is divided into sixty-nine provinces, which are grouped under sixteen departments (*compartimenti territoriali*), some of them consisting of only a single province. The following table furnishes a list of the departments, with their area and population:—

Departments.	Area in sq. m.	Est. Pop. in 1890.
Piemonte (Piedmont), ..	11,332	3,234,506
Liguria, ...	2,039	946,553
Sardinia (Island), ..	9,399	726,522
Lombardia (Lombardy), ..	9,075	3,906,958
Venetia, ...	9,059	2,985,036
Emilia, ...	7,921	2,253,104
Marca (The Marches), ..	3,746	961,476
Umbria, ...	3,719	593,216
Toscana (Tuscany), ..	9,287	2,274,191
Roma (Rome), ...	4,601	977,868
Abruzzi e Molise, ...	6,669	1,360,378
Campania, ...	6,948	3,045,471
Apulia, ...	8,541	1,759,396
Basilicata, ...	4,122	538,707
Calabria, ...	6,663	1,309,554
Sicilia (Sicily), ...	11,289	3,285,472
Kingdom of Italy, ..	114,410	30,158,408

From 1861, when the Kingdom of Italy was constituted, until 1865, Turin was the capital, Florence was then selected, and in 1871 Rome. The largest town is Naples; next in order are Milan, Rome, Turin, Palermo, Genoa, Florence, Venice. The only foreign possessions are Massowah, the Dhalak Islands, &c., on the Red Sea coast of Africa.

Physical Features.—Amongst the principal physical features of Italy are the Alps on its northern frontiers, and the chain of the Apennines, which run down the middle of the peninsula through its whole length to the Straits of Messina, while numerous branches are thrown off laterally, and form an endless succession of wooded hills, olive-clad slopes, and fertile valleys. In the north, inclosed between the ranges of the Alps and Apennines, is a vast and fertile plain, intersected by the Po and its tributaries. Two active volcanoes belong to the kingdom, Vesuvius in South Italy and Etna in Sicily. The eastern shore of Italy is generally flat and uninteresting, presenting particularly along its northern part a series of sandy islands and lagoons, which dam up the mouths of the rivers, and occasion the for-

mation of pestilential marshes. On the west coast the same thing is occasionally seen, as in the case of the Pontine Marshes and the Tuscan Maremma; but as a rule the west coast is more elevated, and often presents delightful scenery, as round the Gulf of Genoa and the Bay of Naples. The only river of any magnitude is the Po, which has a length of about 450 miles before it enters the Adriatic. It is fed by streams both from the Alps and the Apennines, the Ticino, Adda, Oglio, &c., from the former, the Trebbia, Secchia, &c., from the latter. The Adige (in Germany, the Etsch) has its mouth at no great distance from the Po, and is partly fed in the same way. In the peninsular part of Italy are the Arno, Tiber, Garigliano, Volturno, &c. There are a number of lakes, of which the most important are Lakes Maggiore, Lugano, Como, and Garda in the Alpine region; Lakes Trasimeno, Bolsena, and Albano in the Apennine region. Italy is rich in useful minerals, but the scarcity of coal prevents the full development of mining industry. Sulphur, salt, iron, and marble are the chief, though small quantities of lead, copper, zinc, silver, and borax are also obtained.

Climate.—In the south of Italy the climate resembles that of Africa, being dry and burning and subject to the sirocco. In the northern regions, the neighbourhood of the Alps, and the abundance of water-courses, serve to maintain a pleasant temperature. Yet this region is at times extremely cold, especially in the interior of the great plains. In general the climate of Italy is healthy, except marshy districts such as the rice-plantations of Lombardy, the Tuscan Maremma, the Campagna of Rome, and the Pontine Marshes, which give rise to exhalations engendering fevers. The Riviera or coast of the Gulf of Genoa is a favourite winter resort from more northern regions.

Vegetable Products, Agriculture.—The natural productions of the soil of Italy are as various as its climate. In the Alpine regions all plants belonging to temperate climates flourish, while the southern regions possess almost a tropical flora. Agriculture forms the chief support of the population, and the land, where not mountainous, is generally productive, although the system of culture adopted is in most parts defective, and large areas remain untilled. The best cultivation, aided by an excellent system of irrigation, is found in Lombardy, Venetia, Piedmont,

ITALY.

Tuscany, and the parts of Emilia adjoining the Po. Most kinds of cereals, including rice and maize, are cultivated, and the wheat in particular is of fine quality, but is not sufficient for the home consumption. Hemp, madder, flax, tobacco, hops, saffron, and, in the extreme south, cotton and sugarcane are cultivated. Fruits are the object of attention everywhere; and in the cultivation of the olive in particular Italy surpasses all other European states. The fruits include oranges and lemons in the warm regions of the south, besides figs, peaches, apricots, almonds, &c. There is a very large production of wine, but only a few of the wines have any reputation in other countries. The rearing of live-stock is an important industry. The cheese of Italy is famous, especially the Gorgonzola and the Parmesan.

Manufactures.—Since the consolidation of the Italian kingdom, the manufactures of the country have made considerable advances. The most important of these are the silk manufactures, Italy as regards the production of raw silk being in advance of all the other countries of Europe. Lombardy, Piedmont, and Venetia are the great centres for its preparation. Nearly 3,000,000 spindles are employed in spinning. The weaving is less developed. The cotton manufactures are also centred in Upper Italy, chiefly in Lombardy, and have much increased of late. Woollen manufactures are also chiefly carried on in Upper Italy. In the iron industry the department of Lombardy stands at the head; more particularly the provinces of Brescia, Como, and Milan. Tanning, the manufacture of linen, of paper, gold and silver wares, articles in bronze, musical instruments, the making of gloves, boots and shoes, felt and silk hats, are also considerable industries. The manufacture of tobacco is a state monopoly. Of special repute are the cameos and mosaics of Rome, Naples, and Florence; the filigree and coral work of Genoa; the plaited straw and the earthenware manufactures of Italy generally.

Trade.—The foreign trade is mainly with France and Algeria, Great Britain, Austria, and Germany. In 1891 the imports amounted to the value of \$202,785,225; exports to \$157,824,028. The chief imports are wheat, raw cotton, and cotton manufactures, coal, iron and machinery, wool, sugar, coffee; the chief exports, raw silk, olive-oil, wine, fruits, eggs, coral, hemp,

marble, rice, sulphur. The principal ports are Genoa, Leghorn, Messina, Naples, Palermo, Venice, Brindisi, and Catania. The total length of railways opened for traffic in 1888 was 7486 miles; of telegraph-lines, 19,108 miles, nearly two-thirds of the whole belonging to the government.

Constitution and Government.—The constitution of the Kingdom of Italy is a limited monarchy, based upon the Fundamental Statute granted by King Charles Albert to his Sardinian subjects March 4, 1848. The king, who is hereditary, exercises the power of legislation only in conjunction with a national parliament, consisting of two chambers. The first chamber is called the senate, and is composed of the princes of the blood, and an indefinite number of members appointed for life by the king. The second chamber is called the chamber of deputies, and consists of 508 members, who are elected by a majority of all the citizens above twenty-one years of age who are in the enjoyment of civil and political rights. Each province has the right of independent administration, and the executive power is intrusted to a provincial council. In each province the power of the state is represented by a prefect, who is supported by a council. The executive power of the state is exercised by the king through responsible ministers. In 1892-93 the budget estimates were, total revenue, \$299,902,044; expenditure, \$204,969,613; public debt, 1892, \$2,395,943,610.

Army and Navy.—All men capable of bearing arms are under obligation of military service from their twenty-first to the end of their thirty-ninth year. Of the young men of the age of twenty-one, 80,000 are levied annually for the standing army, while the rest are entered in the army of reserve. On June 1, 1892, the strength of the standing army on the war footing was in all 847,269. The mobile militia at that date numbered 531,527, and the territorial militia 1,651,078, giving a general total for the whole military service of 3,029,874 men. In 1891 the navy was made up of 269 steamers afloat or building, including 12 iron-clad vessels of the first class, several of them among the largest yet constructed anywhere.

Religion and Education.—The Roman Catholic is the state religion, but all other creeds are tolerated, and adherents of all religions have equal municipal and political rights. The pope has his seat at Rome, and

his palaces of the Vatican and the Lateran, and his villa of Castel Gandolfo, are not under the jurisdiction of the state. In 1861 the law annihilating ecclesiastical jurisdiction and the privileges of the clergy was extended to the whole of the kingdom, and in 1866 a bill was passed for the suppression (with certain exceptions) of religious houses throughout the kingdom. Elementary education is nominally compulsory, and is entirely supported from the municipal rates; but the number who can neither read nor write still remains very large. For secondary instruction there are a large number of gymnasia and technical schools, and for the higher education there are no less than twenty-one universities, many of them of ancient foundation, and at one time of considerable renown. The oldest are those of Bologna (founded in 1119), Padua (1228), Naples (1224), Rome (1244), Perugia (1320), Pisa (1329), Siena (1349), Pavia (1390), Turin (1412), and Parma (1422).

Money, Weights, and Measures.—The present monetary system of Italy is the same as that of France, the lira being equal to the franc, and divided into 100 centesimi, as the franc is into 100 centimes. The lira is accordingly equal to about $9\frac{1}{2}d$. The weights and measures of Italy have also been adopted from France, with only such modifications in their names as are necessary to give them an Italian form.

History.—The ancient history of Italy will be found under *Rome*. The modern history begins with 476 A.D., when Odoacer, chief of the Herulians, a German tribe who had invaded the country, was proclaimed king of Italy. After a reign of twelve years he and his followers were overpowered by the Ostrogoths under Theodoric the Great. The Ostrogoths were in turn subdued by Byzantine troops, and Italy came under the dominion of the Eastern emperors, who ruled through an exarch residing at Ravenna. In 568 the Lombards (Langobardi), a German people originally from the Elbe, led by their king, Alboin, conquered the Po basin, and founded a kingdom which had its capital at Pavia. The kingdom of the Lombards included Upper Italy, Tuscany, and Umbria, with some outlying districts. But on the north-east coast the inhabitants of the lagoons still retained their independence, and in 697 elected their first doge, and founded the republic of Venice. (See *Venice*.) Ravenna, the seat of the exarch, with Romagna, Rimini, Ancona, and

other maritime cities on the Adriatic, and almost all the coasts of Lower Italy, remained unconquered, together with Sicily and Rome. The slight dependence of this part of Italy on the court of Byzantium disappeared almost entirely in the beginning of the 8th century. The power of the pope, though at first recognized only as a kind of paternal authority of the bishop, grew steadily in these troubled times, especially in the struggle against the Lombard kings. In consideration of the aid expected against King Astolphus, Pope Stephen III. (754) not only anointed the king of the Franks, Pepin, but appointed him patrician or governor of Rome. In return Pepin presented the exarchate of Ravenna, with the five maritime cities, to the pope, thus laying the foundation of the temporal power of the holy see. At the invitation of Pope Hadrian I. Charlemagne made war upon Desiderius, the king of the Lombards, took him prisoner in his capital, Pavia (774), and united his empire with the Frankish monarchy. Italy, with the exception of the duchy of Benevento and the republics of Lower Italy, thus became a constituent part of the Frankish monarchy, and the imperial crown of the West was bestowed on Charlemagne (800). On the breaking up of the Carlovingian empire Italy became a separate kingdom, and the scene of strife between Teutonic invaders. At length Otto the Great was crowned emperor at Rome (961), and the year after became emperor of what was henceforth known as the Holy Roman Empire.

During the following centuries the towns and districts of North and Middle Italy gradually made themselves independent of the empire, and either formed themselves into separate republics or fell under the power of princes bearing various titles. A large part of Middle Italy at the same time was under the dominion of the popes, including the territory granted by Pepin, which was afterwards enlarged on several occasions. In S. Italy there were in the time of Charlemagne several independent states. In the 9th century this part of the peninsula, as well as Sicily, was overrun by Saracens, and in the 11th century by Normans, who ultimately founded a kingdom which embraced both Lower Italy and Sicily, and which, though it more than once changed masters, continued to exist as an undivided kingdom till 1282. In that year Sicily freed herself from the oppression of the then rulers, the French, by the aid of Pedro of

ITALY.

Aragon (see *Sicilian Vespers*), and remained separate till 1435. It was again separate from 1458 to 1504, when both divisions were united with the crown of Spain. With Spain the kingdom remained till 1713, when Naples and Sicily were divided by the Treaty of Utrecht, the former being given to Austria, the latter to the Duke of Savoy. In 1720 they were again united under Austria, but in 1734 were conquered from Austria and passed under the dominion of a separate dynasty belonging to the Spanish house of Bourbon. See *Sicilies, Kingdom of the Two*.

The history of mediæval Italy is much taken up with the party quarrels of the Guelfs and Ghibellines, and the quarrels and rivalries of the free republics of Middle and Upper Italy. In Tuscany the party of the Guelfs formed themselves into a league for the maintenance of the national freedom under the leadership of Florence: only Pisa and Arezzo remained attached to the Ghibelline cause. In Lombardy it was different, Milan, Novara, Lodi, Vercelli, Asti, and Cremona formed a Guelf confederacy, while the Ghibelline league comprised Verona, Mantua, Treviso, Parma, Placenza, Reggio, Modena, and Brescia. Commercial rivalry impelled the maritime republics to mutual wars. At Meloria the Genoese annihilated (1284) the navy of the Pisans, and completed their dominion of the sea by a victory over the Venetians at Curzola (1298). See *Popes, Genoa, Florence, &c.*

Up till the time of the Napoleonic wars Italy remained subject to foreign domination, or split up into separate republics and principalities. The different states were banded to and fro by the chances and intrigues of war and diplomacy between Austria, Spain, and the House of Savoy. During the career of Napoleon numerous changes took place in the map of Italy, and according to an act of the Congress of Vienna in 1815 the country was parcelled out among the following states:—(1) The Kingdom of Sardinia, consisting of the island of Sardinia, Savoy, and Piedmont, to which the Genoese territory was now added. (2) Austria, which received the provinces of Lombardy and Venetia, these having already been acquired by her either before or during the time of Napoleon. (3) The Duchy of Modena. (4) The Duchy of Parma. (5) The Grand-duchy of Tuscany. (6) The Duchy of Lucca. (7) The States of the Church. (8) The Kingdom of the Two Sicilies. (9) The Re-

public of San Marino. (10) The Principality of Monaco. The desire for union and independence had long existed in the hearts of the Italian people, and the governments at Naples, Rome, Lombardy, and other centres of tyranny were in continual conflict with secret political societies. The leading spirit in these agitations in the second quarter of the 19th century was Giuseppe Mazzini, who in the end contributed much to the liberation of his country. The French Revolution of 1848 brought a crisis. The population of Lombardy, Venetia, Parma, and Modena took up arms and drove the Austrian troops in retreat to Verona. Charles Albert, King of Sardinia, then declared war against Austria, and was at first successful, but his forces were severely defeated at Novara (March, 1849), when Charles Albert abdicated in favour of his son Victor Emmanuel. Meanwhile the pope had been driven from Rome, and a Roman republic had been established under Mazzini and Garibaldi, the leader of the volunteer bands of Italian patriots. Rome was, however, captured by the French, who came to the aid of the pope (July, 1849), who resumed his power in April, 1850, under the protection of the French, and the old absolutism was restored. Similar attempts at revolution in Sicily and Naples were also crushed, but the secret societies of the patriots continued their operations. In 1859, after the war of the French and Sardinians against Austria, the latter power was compelled to cede Lombardy to Sardinia, and in the same year Romagna, Modena, Parma, and Piacenza were annexed to that kingdom, which was, however, obliged to cede the provinces of Savoy and Nice to France. In the south the Sicilians revolted, and supported by a thousand volunteers, with whom Garibaldi sailed from Genoa to their aid, overthrew the Bourbon government in Sicily. Garibaldi was proclaimed dictator in the name of Victor Emmanuel. In August Garibaldi crossed to Naples, defeated the royal army there, drove Francis II. to Gaeta, and entered the capital on the 7th September. Sardinia intervened and completed the revolution, when Garibaldi, handing over his conquests to the royal troops, retired to Caprera. A plebiscite confirmed the union with Piedmont, and Victor Emmanuel was proclaimed king of Italy, thus suddenly united almost, in Mazzini's phrase, 'from the Alps to the sea.' Only the province of Venice and the Roman

ITALY.

territory still remained outside. The former was won by Italy's alliance with Prussia in 1866 against Austria. The temporal power of the pope was still secured by French troops at Rome, till the French garrison was withdrawn at the outbreak of the Franco-German war in 1870, when Italian troops took possession of the city in name of King Victor Emmanuel. On 30th June, 1871, the seat of government was formally removed from Florence to Rome. In 1878 Victor Emmanuel died, and was succeeded by his son Humbert I., under whom the general history of the country has been uneventful. At present (1889), Italy is in league with Austria and Germany, an alliance intended to preserve the peace of Europe.

Literature.—The Italian language is one of the Romance tongues, or tongues derived from the Latin, and is therefore a sister of French, Spanish, and Portuguese. It is derived not from the literary language of Rome as we know it, but from the old popular dialect or *Lingua Romana rustica*. The invasions of the German races hastened the development of a new popular idiom, but the German languages exercised no essential influence on the grammatical structure of the new speech, although they contributed a number of words to its vocabulary. The oldest monuments of Italian literature go little further back than the beginning of the 13th century. The Latin language kept its place so long here in its natural home, that the new popular speech was slow to develop; and in fact the earliest literary products of Italy are poems written in the Provençal and French languages. But about the close of the 13th century native poets arose, who indeed imitated the Provençals as to the form of their compositions, but wrote in their own language. Among the most important of these early poets is the Florentine, Guido Cavalcanti (died 1300), who contributed much to the development of Italian language and poetical style. But the great luminary of this period, and by far the greatest poetic genius which Italy has produced, was Dante (1265-1321). (See *Dante*.) In Italian prose the oldest book is Ristoro d'Arezzo's *Composizione del Mondo*, written about the middle of the 13th century. In this department Dante also takes a high place with his *Vita Nuova*, and *Convito*. Francesco Petrarca (Petrarch; 1304-74), another of the great lights of Italian

literature, exhibits in his sonnets and canzoni a vein less profound and transcendental than Dante's, but more humanly tender and passionate. Boccaccio (1313-75), a writer of great erudition and fertility, who produced classical translations, biographies, poems, &c., is Italy's first great story-teller. He is the master of the ornate classical style in prose to which he first gave high artistic form. His great work is the *Decamerone*, a collection of a hundred tales. Amongst the other productions of the time are the historical works of Villani Capponi and Dino Compagni, the latter of doubtful authenticity, the travels of the Venetian Marco Polo, and the letters of St. Catherine of Siena. Amongst the comic poets of the time are Bindo Bonichi, Cecco Nuccoli, Andrea Orgagni, and Antonio Pucci.

During the 15th century the intellectual energy of Italy was almost entirely absorbed in the study of the ancient classics. This period is known as the Renaissance, or the revival of arts and letters. Italy had at this time become wealthy by commerce, and was enjoying comparative peace. Her cities were full of learned Greek refugees from Constantinople; many of her states were ruled by families such as those of the Medici at Florence, the Este in Ferrara, the Gonzaga in Mantua, whose names are identified with the most munificent patronage of learning and art. In the midst of this classical enthusiasm there was some danger of the national literature and language being neglected, but towards the end of the century Italian literature revived with the *Canti Carnascialeschi* and *Ballate* of Lorenzo de Medici and Poliziano, the chivalrous epic *Orlando Innamorato* of Boiardo, the *Morgante Maggiore* of Luigi Pulci, and the *Mambriano* of Francesco Bello (Cieco of Ferrara).

During the first half of the 16th century the Renaissance movement perfected itself in every kind of art. In history the most noted names are Machiavelli, 1469-1527, and Francesco Guicciardini (1482-1540). Among the great poets of the period are Lodovico Ariosto (1474-1533), author of *Orlando Furioso*, a romantic epic, written in continuation of the *Orlando Innamorato* of Boiardo, and Torquato Tasso (1544-95), whose *Gerusalemme Liberata* is Italy's chief heroic poem. Amongst the lyrists of this century we may mention Guidiccioni of Lucca, Pietro Bembo, Michel-

angelo Buonarroti, and Vittoria Colonna. Berni Cammelli and Grazzini deserve mention amongst humorous and burlesque writers, and Bandello amongst story-tellers. Better known, however, are Giorgio Vasari (1512-74), himself an eminent painter, but more celebrated as a delightful gossip on art and artists; Benvenuto Cellini (1500-70), the famous artist in metal, whose autobiography is one of the most instructive lights on the spirit and manners of the age, and Giordano Bruno (1550-1600), a bold speculator and undaunted champion of liberty of thought. In the period which followed poetical and imaginative literature degenerated into mannerism and affectation. Of exceptional power was Alessandro Tassoni (1565-1635), who wrote the *Secchia Rapita*, a burlesque epic, and unquestionably the most important poetical production in Italian of the 17th century. Salvator Rosa, also, better known as a painter, wrote satirical verse of some merit. But the most eminent names of this period are those of scientific and philosophic writers. Amongst the former are Galileo Galilei (1564-1642), Torricelli (1608-1647), Viviani (1622-1703); amongst the latter are Tommaso Campanella (1568-1639), and Giambattista Vico (1668-1744). Amongst historians the names of Sarpi, Davila, Bentivoglio, and Pietro Giannone deserve mention. Towards the end of the century a new school of poetry arose, which was mainly a reaction against the existing turgid and affected style. The Academy of Arcadia was instituted (1690) to promote simplicity of style and the choice of simple pastoral subjects. The Arcadians produced no considerable poet, the chief names being Crescimbeni, Gravina, Frugoni, Zappi, and Rolli.

About the middle of the 18th century a complete revolution took place in Italian literature, which was preceded and accompanied by a general elevation of public life. The influence of English and German literature began to communicate a more healthy tone to the national literature. Gasparo Gozzi (1713-86) in the periodical *L'Osservatore*, and Giuseppe Baretti in a journal called the *Frusta Letteraria*, contributed perhaps more than any others, by their forcible and lively satire, to bring about this improvement. In dramatic literature the libretti of Pietro Trapassi (1698-1782), better known by his assumed name of Metastasio, had considerable merit, though tending to over-refinement of sentiment and

expression. In 1713 Scipione Maffei, celebrated also as an archæologist, produced the tragedy of *Merope*, highly lauded at that time. But the two great names in the Italian drama are, in comedy, Carlo Goldoni (1707-93), and in tragedy, Vittorio Alfieri (1749-1803). Towards the end of the century the writings of the publicists Gaetano Filangieri and Cesare Beccaria indicate the growth of a social science under the cover of treatises on legislation and penal laws.

From the intellectual and political ferment which arose about the beginning of the 19th century Italy in particular received a much-needed stimulus. In poetry Ugo Foscolo (1776-1827), though following classical models and traditions, writes with the force and novelty of a new epoch. Vincenzo Monti (1754-1828) had a rich poetic vein and a facile talent. Alessandro Manzoni (1784-1883) has given Italy a few lyrics of the first rank, but the work which has most contributed to give him the high place he holds in literature is his novel, *I Promessi Sposi*. An equally high, if not a higher place, is due to the poetry of Leopardi. His prose is amongst the best that Italy has produced. Amongst the lesser though still notable names are Tommaso Grossi, Silvio Pellico, Giambattista Niccolini, a writer of dramas; Giovanni Berchet, a writer of songs and lyrics; and Giuseppe Giusti, the genial satirist. The historico-political writings of Vincenzo Gioberti (1801-52) and Giuseppe Mazzini (1805-72) contributed powerfully to stimulate the national feeling and to shape the course of events. In history proper Amari (*I Vespri Siciliani*), Gino Capponi (*Repubblica di Firenze*), Ricotti, Zamboni, and others are the best known names. Amongst later and contemporary authors we may notice the poet, critic, and essayist Giosue Carducci; and Francesco de Sanctis (1818-86), the Sainte-Beuve and Matthew Arnold of Italy. Ruggero Bonghi, a biographer and essayist of superior rank and a frequent contributor to the periodicals; Edmondo de Amicis, a descriptive writer of considerable power; Angelo de Gubernatis, a writer of literary biographies, &c., are amongst the best known writers of the day.

Itch, a contagious cutaneous disease, appearing in small watery pustules on the skin, accompanied with uneasiness or irritation that inclines the patient to rub or scratch. It is occasioned by a small insect (*Acarus*

scabiei), which burrows within the epidermis; and is cured by sulphur, which should be applied externally in the form of ointment. See next article.

Itch-mite (*Acarus scabiei* or *Sarcoptes scabiei*), a microscopic insect of the class Arachnida, which produces itch in man. The female burrows in the skin, in which she deposits her eggs, which are hatched in about ten days, giving rise to this troublesome affection.

Ith'aca, now **THIAKI**, one of the Ionian Islands, on the west of Greece, between the mainland and Cephalonia, 17 miles long, and not above 4 broad. It is rugged and uneven, and divided into two nearly equal parts, connected by a narrow isthmus. The inhabitants are industrious agriculturists and mariners, and build and fit out a considerable number of vessels. They seem to be of pure Greek race, and the women are famed for their beauty. Ithaca was the royal seat of Ulysses, and is minutely described in the Odyssey. Schliemann has recently made important excavations, and has identified several sites mentioned by Homer. Vathi, the modern capital, trades largely in oil, wine, raisins, and currants, and has a population of about 6000. That of the island is about 11,000.

Ithaca, a town of the U. States, state of New York, about $1\frac{1}{2}$ mile s. of the head of Cayuga Lake, the seat of Cornell University (which see). Pop. 1890, 11,079.

Itin'erary, a list of the stations or places on the route between two important localities, together with the distances between them. Some ancient itineraries are of importance to geographers. Of these the most important are the Antonine Itineraries, including the Itinerarium Provinciarum, or a list of the routes through the Roman provinces of Europe, Asia, and Africa; and the Itinerarium Maritimum, exhibiting the most frequented tracks along the coasts and at sea; and the Jerusalem Itinerary (Itinerarium Hierosolymitanum), made by a Christian in 333 for the use of travellers from Burdigala (Bordeaux) to Jerusalem.

Itri, a town of South Italy, in the province of Caserta, 6 miles N.W. of Gaeta, on a lofty hill. Pop. 6375.

Itu', **HITU'**, or **YTU'**, a town of Brazil, province of Sao Paulo, on the Tiete. Pop. 10,000.

Ituræ'a, **ITURE'A**, a district on the north of ancient Palestine, stretching north-eastward from Mount Hermon.

Iturbide (ē-tur'bē-dā), **AUGUSTIN DE**, a distinguished Spanish-American, born at Valladolid, in Mexico, in 1787. On the breaking out of the revolutionary troubles in Mexico he joined the royalist party, and displayed such valour and ability that in 1815 he rose to the chief command of the army, but latterly went over to the other side, quickly bore down all opposition, and became so popular that he proclaimed himself Emperor of Mexico in 1822. His reign was full of trouble, and came to an end in less than a year, by his abdication. Congress granted him a yearly pension on condition of his leaving the country, and he resided in Leghorn about a year, when he made an attempt to recover the crown. He landed with but a single attendant, and was arrested and shot, 1824.

Itzehoe (it'se-hō), a town of Prussia, in Schleswig-Holstein, in a valley inclosed by wooded hills, on the Stör, 32 miles north-west of Hamburg. It is the oldest town in the duchy, being founded by Charlemagne in 809. Pop. 10,772.

Iu'lus, a genus of *Myriapoda*, order Chilognatha, including worm-like animals known as millipedes, allied to the centipedes.

I'van, or **IWAN**, the name of several rulers distinguished in Russian history.—**IVAN III.** (or **I.**), grand-prince of Moscow, was born 1440, ascended the throne 1462, died 1505. He greatly enlarged his hereditary possessions, and married Sophia, niece of the last Byzantine emperor, thus introducing the double-headed Byzantine eagle into the Russian coat of arms. He was the first that bore the title of Czar of Great Russia, and proclaimed the unity and the indivisibility of the Russian dominions.—**IVAN IV.** (or **II.**), grandson of the former, was born 1530, succeeded in 1534, was crowned in 1547, died 1584. His atrocities gained him the name of *The Terrible*. Yet he did much to civilize and improve his people, introduced learned men, artists, and mechanics into Russia, and concluded a commercial treaty with England. He killed his eldest son in a fit of rage.

Ivano'vo, a town of Russia, government of Vladimir, an important centre of the Russian cotton manufacture, and hence styled 'the Russian Manchester.' Pop. 12,000.

Ives, **ST.**, a seaport town of England, in Cornwall, picturesquely situated on St. Ives Bay, 18 miles W.N.W. from Falmouth. The principal business of the place is the pilchard fishery. The town gives name to a par-

liamentary division of the county. Pop. 6445.

Ives, St., a market town of England, in Huntingdonshire, on the Ouse. The markets for cattle and sheep are among the largest in the kingdom. Pop. 3038.

Iviça (ē'vi-sà; ancient *Ebŭsus*), an island of the Mediterranean belonging to Spain, 52 miles from Majorca, one of the Balearic Islands; area, 190 square miles; pop. 25,505. It is fertile, producing corn, wine, oil, fruit, &c. Salt forms, with fish and wood, the chief export. The capital is of the same name, and has a good harbour. Pop. 6000.

Ivory, the osseous matter of the tusks of the elephant, and of the teeth or tusks of the hippopotamus, walrus, and narwhal. Ivory is esteemed for its beautiful white or cream colour, its hardness, the fineness of its grain, and its susceptibility of a high polish. That of the African elephant is most esteemed by the manufacturer for its density and whiteness. It is used as a material for knife-handles, pianoforte keys, &c. The ivory of the hippopotamus is preferred by the dentist, being free from grain and much harder and of a purer white than that of the elephant. The shavings and saw-dust of ivory may by burning be converted into a black powder, used in painting, named *ivory black*. Ivory may be stained or dyed; a black colour is given it by a solution of brass and a decoction of logwood; a green one by a solution of verdigris; and a red by being boiled with Brazil wood in lime-water. The use of ivory, chiefly for ornamental purposes, was well known in early ages. Among the Greeks it was employed for statuary purposes, &c. The medium weight of an elephant's tusk is 60 lbs., but some are found weighing 170. Ivory is an important article of African trade, and the number of elephants annually killed must be great; indeed, the extermination of this noble animal is only a question of time.

Ivory, VEGETABLE. See *Ivory-palm*.

Ivory-black, a fine kind of soft black pigment, prepared from ivory dust by calcination, in the same way as bone-black. See *Bone-black*.

Ivory Coast, part of the coast of Guinea, between Cape Apollonia and Cape Palmas. The eastern portion of it belongs to Britain.

Ivory-nuts. See *Ivory-palm*.

Ivory-palm (*Phytelphas macrocarpa*), a low-growing, palm-like plant, order Pandanaceæ, native of the warmer parts of South America. It has a creeping caudex or trunk,

terminal pinnatifid leaves of immense size, male and female flowers on different plants, and fruit in the form of a cluster of drupes, weighing about 25 lbs. when ripe. Each drupe contains 6 to 9 seeds, as large as a hen's egg, the albumen of which when ripe is close-grained and very hard, resembling the finest ivory in texture and colour. It is therefore often wrought into buttons, knobs for doors or drawers, umbrella handles, and other articles, and is called *Vegetable Ivory*. The seeds are also known as *Corozo-nuts*, and are imported in considerable quantities.

Ivrea (iv-rā'ā), a town of North Italy, province of Turin, picturesquely situated on the Dora Baltea, with a cathedral, said to have been founded in the fifth century on the site of a heathen temple. Pop. 10,413.

Ivry-la-Bataille (iv-rē-lā-bā-tā-yé), a village in France, 40 miles w. of Paris, where a battle was gained by Henry IV. in 1590 over the forces of the League.

Ivry-sur-Seine (iv-rē-sūr-sen), a town of France, on the Seine, 3 miles s.s.e. from Paris. It has a fine church, the remains of an old castle, asylum for lunatics, various manufactures, and extensive wine-cellars hewn out of the rock. Pop. 18,442.

Ivy, a climbing plant of the genus *Hedera* (*H. Helix*), natural order Araliaceæ. The leaves are smooth and shining, varying much in form, from oval entire to three and five lobed; and their perpetual verdure gives the plant a beautiful appearance. The flowers are greenish and inconspicuous, disposed in globose umbels, and are succeeded by deep green or almost blackish berries. *H. Helix* (the common ivy) is found throughout almost the whole of Europe, and in many parts of Asia and Africa. It is plentiful in Britain, growing in hedges, woods, on old buildings, rocks, and trunks of trees. A variety, called the Irish ivy, is much cultivated on account of the large size of its foliage and rapid growth. Several varieties of ivy are grown in American gardens. The ivy attains a great age, and becomes several inches thick. The wood is soft and porous, and when cut into very thin plates may be used for filtering liquids. In Switzerland and the south of Europe it is employed in making various useful articles. The ivy has been celebrated from remote antiquity, and was held sacred in some countries, as Greece and Egypt. Its medicinal properties are unimportant. Chinese ivy (*Parechites Thunbergii*) is a climbing shrub with privet-like leaves and sweet-scented flowers,

Ix'ia, a genus of plants of the Iris family, natives of the Cape, and prized for their large and showy flowers.

Ixi'on, in Greek mythology, king of the Lapithæ in Thessaly, who for his wickedness was punished in the infernal regions by being tied to a perpetually revolving fiery wheel.

Ixmiquilpan, a town of Mexico, state of Hidalgo, 80 miles north of the city of Mexico, with silver mines in its neighbourhood. Pop. 6000.

Ixo'des, the 'Ticks' (which see).

Ixtle, a Mexican fibre, probably the production of a species of the pine-apple family.

Iz'dubar, a hero of early Babylonia, perhaps a real personage, but latterly converted into a deity and worshipped. In the cuneiform inscriptions feats similar to those of Hercules are ascribed to him.

Izucar', a town of Mexico, 90 miles south-east of the capital, at the base of Popocatepetl, the centre of a rich sugar region; pop. 12,000.

J.

J, the tenth letter in the English alphabet, and the seventh consonant. The sound of this letter coincides exactly with that of *g* in *genius*. It is therefore classed as a palatal, and is the voiced sound corresponding to the breathed sound *ch* (as in *church*). The sound does not occur in Anglo-Saxon, and was introduced through the French. As a character it was formerly used interchangeably with *i*, and the separation of these two letters in English dictionaries is of comparatively recent date.

Jaal-Goat (*Capra Jaala*), a species of goat found in Egypt, Abyssinia, and Mount Sinai.

Jabalpur (*ja-bal-pör'*), JUBBULPORE, a town of Hindustan, capital of Jabalpur district, Central Provinces, a modern town with wide and regular streets, an important railway-station and centre of trade, situated amidst rocks at an elevation of about 1500 feet above the level of the sea. It has a school of industry, in which large quantities of tents and carpets are made. Pop. 75,705. The district has an area of 3918 sq. miles, a pop. of 687,233. A division or commissionership of the Central Provinces has also the same name. It has an area of 18,688 sq. miles, a pop. of 2,201,633.

Jab'iru, a name of wading birds of the crane kind, resembling the stork, and inhabiting S. America, Africa, and Australia.

Jaboran'di, a powerful drug obtained from the leaves and root of one or more plants of the genus *Pilocarpus*, order Rutaceæ, natives of Brazil. It causes a great increase of the saliva and profuse perspiration.

Jacamar' (*Galbula*), a genus of brilliant birds nearly allied to the kingfishers, differing however by the form of their beak and feet. They live in damp woods, and feed

on insects. Most if not all are natives of tropical America.

Jac'ana the common name of grallatorial or wading birds of the genus *Parra*, having long toes with very long nails, so that they can stand and walk on the leaves of aquatic plants when in search of their food, which consists of worms, small fishes, and insects. They inhabit marshes in hot climates, and somewhat resemble the moorhen, to which they are very closely allied.



Long-tailed Jacana (*Parra sinensis*).

Jacaran'da, a name of several South American trees, natural order Leguminosæ, yielding the fancy woods known as violet-wood, kingwood, and tiger-wood. A genus of Brazilian tree is also called *Jacaranda*, and some species of it yield rose-wood. It belongs to the natural order Bignoniaceæ.

Jacare (*jäk'â-râ*), a species of Brazilian alligator, *Jacare* or *Alligator sclerops*.

Jacita'ra-palm (*Desmoncus macroacanthus*), a palm found in the forests of the lowlands of the Amazon district in South America. It has a slender flexible stem, often 60 or 70 feet long.

Jack, from Fr. *Jacques*, James, which being a very common personal name in France, came to stand for any common fellow or menial, and was substituted for

the equally common English name John. Hence its application in such terms as *boot-jack*, *smoke-jack*, *roasting-jack*, &c., and also in several senses alone. Thus a *jack* is an apparatus for raising great weights by the application of strong screws. The flag called a *jack* is strictly one displayed from a staff on the end of a bowsprit. See *Union Flag*.

Jack, or **JACA** (*Artocarpus integrifolia*), a tree of the bread-fruit genus, a native of India. The fruit grows to a larger size than the bread-fruit, often weighing more than 30 lbs; but it is neither so palatable nor so nutritious. It forms a great part of the food of the natives in some parts of India, Ceylon, &c. The timber is of a yellowish colour, and is used for many purposes.

Jackal, an animal of the dog genus (*Canis aureus*), resembling a dog and a fox, a native of Asia and Africa. The general colour is a dirty yellow. The jackal is



Jackal (*Canis aureus*).

gregarious, hunting in packs, rarely attacking the larger quadrupeds. They feed chiefly on carrion, and are nocturnal in habits. The jackal interbreeds with the common dog, and may be domesticated. The common jackal is the most widely distributed. Another species is found in Southern Africa, the black-backed jackal (*C. mesomelas*).

Jack-a-Lantern. See *Ignis Fatuus*.

Jackass, **LAUGHING**. See *Laughing Jack-ass*.

Jack-boots, large boots reaching above the knee, used by horsemen (military and other) as a sort of protection for the legs.

Jack-by-the-hedge, a British plant. See *Alliaria*.

Jackdaw (*Corvus monedula*), a common British bird of the crow family, smaller than the rook, having a comparatively short bill and whitish eyes; hinder part of the head and neck of a grayish colour, back and wings glossy black. The

average length is about 12 inches. The nests are built in towers, spires, and like elevated situations, and often in towns. The eggs, from five to six, are of a greenish colour. Its food consists of worms, insects, and larvæ. Like the rooks, they are gregarious. They are readily domesticated, and may be taught to pronounce words distinctly.

Jackson, Madison co., Tenn., is a prosperous city, exporting many thousands of bales of cotton annually. Pop. 1890, 10,039.

Jackson, a flourishing town of Michigan, United States, 76 miles west of Detroit, an important railway centre, with coal-mines, foundries, engine-works, and manufactures of various kinds. Here is Michigan State prison. Pop. 20,797.

Jackson, a town, capital of Mississippi, United States, on the Pearl River, 44 miles east of Vicksburg. It contains a handsome state house and other government buildings, the state lunatic asylum, penitentiary, &c. Pop. 5920.

Jackson, **ANDREW**, President of the United States from 1829 to 1837, was born in South Carolina in 1767, his father, by origin a Scotchman, having died before his birth. In his fourteenth year, on the outbreak of the American revolution, he joined a regiment of volunteers to fight in the cause of independence. After losing two brothers in the struggle, he retired from military service and devoted himself to law. He became a judge of the supreme court, representative of Tennessee in Congress, and senator. When, in 1812, war was declared against England, he was made major-general of the Tennessee militia. In 1813 he defeated the Creek Indians, who were wasting the country with fire and sword, and made himself master of Pensacola. While engaged in the defence of New Orleans, he established his military reputation by his repulse of the British there in 1815. His arbitrary proceedings, however, incurred general censure, and he was condemned to pay a heavy fine. From 1817-18 he was employed against the Seminole Indians, but again sullied his reputation by excessive severity. In 1828 and again in 1832 he was elected president, and the eight years during which he held this office were marked by the rapid extension of democratic tendencies. In 1837 he retired to his estate in Tennessee, and there he died in 1845.

Jackson, **THOMAS JONATHAN**, better known as *Stonewall Jackson*, an American gene-

ral, born in 1824 in Virginia. In 1842 he entered the military academy at West Point as cadet. Four years later he received a second-lieutenant's commission, and was engaged in the Mexican war, and for his gallantry was made a captain, and afterwards raised to the rank of major. In 1851 he resigned his commission and was appointed professor of mathematics and artillery tactics in the military institute at Lexington, Virginia. On the outbreak of the civil war in 1861 he entered the Southern army with the rank of brigadier-general. He commanded the reserve at Bull's Run, and acquired his cognomen of 'Stonewall' by the firmness of his troops and his own coolness in the heat of the action. By the end of the year he was made major-general. In June, 1862, he repelled Fremont at Cross Keys, and routed McDowell near Port Republic. In August he gained the second battle of Bull's Run, and captured Harper's Ferry in September. In the same month he supported Lee at Antietam, and again at Fredericksburg in December. In 1863 he took a prominent part in the battle of Chancellorsville. On the evening of the battle he died of wounds inadvertently received from his own men, 9th May, 1863. He was a man of indomitable energy and deep religious feeling.

Jackson, WILLIAM, an English musical composer, born 1730, died 1803. Having studied music in London, in 1777 he was made organist of the cathedral in his native city, Exeter, where he passed the rest of his life. His musical compositions, especially his songs and duets, are still justly popular, and are distinguished by chasteness of conception, ingenuity, and truth of expression.

Jacksonville, a town of Illinois, United States, on a fertile prairie, near a small affluent of the Illinois River. It has been called the '*Athens of the West*,' and is distinguished for the elegance of its public buildings, and for the number of its educational and charitable institutions, among which are the Illinois College, the state asylums for the blind, the insane, and the deaf and dumb. Pop. 1890, 10,740.

Jacksonville, a town of Florida, United States, the principal port on the river St. John, 25 miles from its mouth, with considerable steamboat traffic and a trade in lumber, naval stores, cotton, &c. Pop. 17,201.

Jack-wood, the timber of the jack-tree.

Jacob, the son of Isaac, and the grandson of Abraham, the last of the Jewish patri-

archs, and the true ancestor of the Jews. Having craftily obtained from the blind and infirm Isaac the blessing of the first-born in place of his brother Esau, he was obliged to flee from the anger of his brother, and took up his abode with his uncle Laban. Here he served twenty years, and obtained Leah and Rachel as his wives. On his return to Canaan he was met by an angel, with whom he wrestled all night, and having gained the victory was thereafter named *Israel*, that is, *the hero of God*. Hence the Hebrews from him are called *Israelites*. A severe blow to him in his old age was the loss of his favourite son Joseph, whose brothers had sold him to Ishmaelite merchants, and led Jacob to believe that he had been devoured by wild beasts. Joseph subsequently became the highest officer at the court of Pharaoh in Egypt, and thus was the means of bringing the whole house of his father to that country. Jacob died, aged 147 years, approximately about 1860 B.C., and according to his wish was buried in the tomb of Abraham, before Mamre in Canaan.

Jacobabad (ja-kob-ä-bäd'), a town of Hindustan, the military and civil headquarters of the Upper Sind frontier district, Bombay. Pop. 11,552.



Jacobean Architecture.—Waterston Hall, Dorset.

Jaco'bean Architecture, a term applied to the later style of Elizabethan architec-

ture from its prevailing in the time of James I. (L. *Jacōbus*, James). It differed from the pure Elizabethan chiefly in having a greater admixture of debased Italian forms.

Jacobi (yā-kō'bi), FRIEDRICH HEINRICH, a German philosopher, born 1743, died 1819. He first engaged in commerce, but shook himself clear of business on receiving a public appointment. He formed acquaintance with many of the most eminent literary men of the day, including Goethe, Wieland, and Herder. Latterly he was made president of the Bavarian Academy at Munich, retiring in 1813. His views had some analogies with those of Hamilton and the Scotch school. Thought, he affirms, cannot explain facts but only connect them. The existence of objects that affect us cannot be demonstrated, but we are directly convinced of their existence in the act of perception. The knowledge of God is present to us through the heart in virtue of the divine spirit within us, which comes directly from God. His most noted works are the philosophic novels, *Allwill's Briefsammlung* and *Woldemar*; a work on the doctrine of Spinoza, in *Letters to Moses Mendelssohn*; *David Hume über den Glauben*, or *Idealism and Realism*.

Jac'obins, the most famous of the clubs of the first French revolution. When the states-general assembled at Versailles in 1789, it was formed and called the *Club Bréton*. On the removal of the court and national assembly to Paris it acquired importance and rapidly increased. It adopted the name of *Société des Amis de la Constitution*, but as it met in a hall of the former Jacobin convent in Paris, it was called the Jacobin Club. It gradually became the controlling power of the revolution, and spread its influence over France, 1200 branch societies being established before 1791, and obeying orders from the headquarters in Paris. In 1791 the publication of the *Journal de la Société des Amis de la Constitution* increased the zeal and number of the societies. The Jacobins were foremost in the insurrectionary movements of June 20 and August 10, 1792; they originated the formidable *commune de Paris*, and changed their former name to *Les Amis de la Liberté et de l'Égalité*. For a while they ruled supreme, and the Convention itself was but their tool. Robespierre was their most influential member; they ruled through him during the Reign of Terror,

and were overthrown after his downfall in 1794. In that year the Convention forbade the affiliation of societies; the Jacobin Club was suspended and its hall was closed. The term Jacobin is now often used to designate anyone holding extreme views in politics.

Jac'obites, Monophysite Christians in the East, who were united by a Syrian monk, Jacobus Bardai (578), during the reign of Justinian, into a distinct religious sect. The Jacobites, so styled from their founder, consist of about 30,000 or 40,000 families, and are governed by two patriarchs, appointed by the Turkish governors, one of whom, with the title of the *Patriarch of Antioch*, has his seat at Diarbekir; the other resides in a monastery near Mardin, under the style of *Patriarch of Jerusalem*. Circumcision before baptism and the doctrine of the single nature of Christ (hence their name *Monophysites*) are common to them with the Copts and Abyssinians; but in other respects they deviate less than the other Monophysites from the discipline and liturgy of the orthodox Greek Church.

Jac'obites, a party in Britain (so styled from Lat. *Jacōbus*, James), who after the revolution in 1688 continued to be the adherents of the dethroned King James II. and his posterity. In Ireland they were soon put down by conquest. In England the revolution was accomplished with the apparent consent of all parties; but in a year or two the Jacobite party gained considerable influence, and continued to disturb the government of William throughout his reign. After the accession of Anne and the death of James their efforts slackened for a time; but towards the close of her reign they revived. Bolinbroke and Oxford, with others of the Tory ministers of Anne, were in treaty with the son of James II., and either really or pretendedly negotiated for a restoration. On the arrival of George I. in 1715 a rebellion broke out in Scotland, supported by a more insignificant rising in the north of England. The failure of both these movements damped the enthusiasm of the English Jacobites, but in Scotland the party maintained its influence until the unsuccessful rebellion of 1745 put an end to its political importance, though some ultra-Jacobites did not think themselves justified in transferring their allegiance to the house of Brunswick till the death of Cardinal York in 1807. The hopes and wishes of the Scottish Jacobites found expression in many beautiful songs, which

form an interesting portion of the national literature.

Jacquard (zhäk-är), JOSEPH MARIE, the inventor of the famous machine for figured weaving named after him, was born at Lyons in 1752. His parents were silk weavers, and he learned the same trade. After a long period of hardship, during which he shared in some of the campaigns of the revolution, he made his name famous by the invention of his new loom, which was publicly exhibited in 1801. He endeavoured to introduce it into general use in Lyons, but was mobbed, and all but lost his life. Ultimately, however, his invention was bought by the French government, and he was able to spend the latter part of his life in comfortable independence. The subsequent prosperity of Lyons is largely attributable to his invention, and a more enlightened generation erected a statue to him on the very spot where his loom was publicly destroyed. He died in 1834.

Jacquard Loom, a form of loom, the characteristic of which is a contrivance appended to it for weaving figured goods in various colours. See *Weaving*.

Jacquerie (zhäk-rē), the name given to the rising of the French peasantry against their lords in the middle of the 14th century after the battle of Poitiers. They committed great devastations and outrages, particularly in the north-east of France. They were at length quelled by Captal de Buch and Gaston Phébus, count of Foix. The term *Jacquerie* is derived from *Jacques Bonhomme*, a familiar epithet for a peasant.

Jactitation of Marriage, in the common law, a boasting or giving out by a party that he or she is married to another, whereby a common reputation of their marriage may follow.

Jade, or JAHDE (yä'de), a small strip of coast territory belonging to the Prussian province of Hanover, but locally in the grand-duchy of Oldenburg, at the entrance of Jade Bay. It was acquired by the Prussian government for the purpose of constructing a naval port and shipyard, and here has grown up Wilhelmshaven (which see).

Jade, an ornamental stone, also called nephrite, a native silicate of calcium and magnesium, usually of a colour more or less green, of a resinous or oily aspect when polished, hard and very tenacious. It has been used by rude nations for their weapons and implements, and has been and is highly prized for making carved ornaments in China,

New Zealand, and among the native races of Mexico and Peru. Jade celts or axes are common among uncivilized races, and prehistoric specimens have been found in Europe, though the stone itself is not found there. A similar stone, more properly called *jadeite*, is frequently confounded with jade proper. It is a silicate of aluminium and sodium.

Jaen (hå-en'), a picturesque town, Spain, Andalusia, capital of the province of Jaen, on the Jaen, a tributary of the Guadalquivir, 122 miles E.N.E. of Seville. It is the seat of a bishop, and has two cathedrals. Pop. 24,392.

Jaffa (anciently *Joppa*), a maritime town in Palestine, 31 miles north-west of Jerusalem, picturesquely situated upon an eminence, the port of Nablus and Jerusalem, with which latter it is to be connected by railway. It exports oranges (an excellent variety), soap, grain, sesame, olive oil, &c. Pop. above 8000.

Jaffna, or JAFNAPATAM, a town in Ceylon, at the northern extremity of the island, originally a Dutch settlement, and still thoroughly Dutch in its architecture and aspect. Most of the inhabitants are Tamils and Moors. Pop. 35,000.

Jagannâtha (jag-an-nât'ha; Skr. 'Lord of the World'), often written *Juggernaut*, the name given to the Indian god Krishna, the eighth incarnation of Vishnu, and to a very celebrated idol of this deity in a temple specially dedicated to Jagannâtha at Puri, a town in Orissa, on the Bay of Bengal. It is a very rudely-cut wooden image, having the body red, the face black, and the arms gilt; the mouth is open and blood-red; the eyes are formed of precious stones. It is covered with magnificent vestments and seated upon a throne between two others—his brother Bala-Rama and his sister Subhadra, coloured respectively white and black. Great numbers of pilgrims, sometimes a hundred thousand, at the time of the festivals of Jagannâtha, assemble from all quarters of India to pay their devotions at his shrine. On these occasions the idol is mounted on a huge car resting on sixteen wheels, which is drawn by the pilgrims; and formerly great numbers of the congregated people were wont to throw themselves under the wheels, and were thus crushed to death, the victims believing that by suffering this sort of death they would be immediately conveyed to heaven. This horrid practice, however, is now of rare occurrence.

Jägerndorf (yā'gěrn-dorf), a town of Austria, in Silesia, on the Oppa, 13 miles north-west of Troppau. It is walled, has a handsome church, a ducal palace, and manufactures of woollens, &c. Pop. 11,792.

Jag'gery, a coarse brown sugar made in the East Indies by the evaporation of the juice of several species of palms. It is chemically the same as cane-sugar.

Jaghire (jag'hēr), in Hindustan, a term closely corresponding to the fief of mediæval Europe. It is an assignment of the government share of the produce of a portion of land to an individual, either personal or for the support of a public establishment.

Jago, *Str.*, several cities, islands, &c. See *Santiago*.

Jaguar (ja-gwār'), *Felis onca*, the American tiger, a carnivorous animal of S. and Central America, sometimes equalling a tiger in size, of a yellowish or fawn colour,



Jaguar (*Felis onca*).

marked with large dark spots and rings, the latter with a dark spot in the centre of each. It rarely attacks man unless hard pressed by hunger or driven to bay. The skin is valuable, and the animal is hunted by the South Americans in various ways.

Jahde. See *Jade* (Prussian territory).

Jahn (yān), OTTO, German philologist and archæologist, born 1813, died 1869. He studied at Kiel, Leipzig, and Berlin, travelled in France and Italy; on his return qualified himself for university teaching, became professor extraordinary of archæology and philology at Greifswald in 1842, and full professor in 1845. In 1847 he was called to a similar chair in Leipzig, but lost this post in 1851 for his political action. In 1855 he was called to Bonn as professor of antiquities and director of the art museum. His writings on classical art and antiquities were very numerous; he also edited works of Greek and Latin authors, and published valuable contributions to the history of

German literature, as also on various musical subjects.

Jail, or GAOL, a prison or place of legal confinement. See *Prison*.

Jail Fever, a dangerous disease once very prevalent in prisons, and which is now considered to be merely a severe form of typhus fever (which see).

Jainas, or JAINS, a Hindu religious sect, which, from the wealth and influence of its members, forms an important division of the Indian population. The sect was very numerous and important in the 8th and 9th centuries of the Christian era, and they have left many monuments of their skill and power in the fine temples built in different parts of the country. Jainism was an offshoot of Buddhism, with which it has many leading doctrines in common, but is distinguished from it by its recognition of a divine personal ruler of all, and by its political leanings towards Brahmanism. The Jains reverence certain holy mortals, who have acquired by self-denial and mortification a station superior to that of the gods; and they manifest extreme tenderness for animal life.

Jaintia Hills, a collection of hills in Assam, giving name to a district of about 2000 sq. miles, with 56,000 inhabitants.

Jaipur (jī-pōr'), or JEYPORE, a state in Rajputāna, Hindustan, governed by a maharajah, under the political superintendence of the Eastern States Agency; area, 15,349 sq. miles. The soil, except in the south-east, is mostly sandy; the surface of the country is diversified by hill ranges. Corn, cotton, tobacco, opium, sugar-cane, are extensively raised. There are manufactures of enamel work on gold, of woollen cloth, &c. Pop. 2,832,276.—The capital, JAIPUR, one of the finest of modern Hindu cities, has regular streets, with large, handsome houses. There is a college, a school of arts, an industrial museum, a hospital, fine gardens, and several beautiful temples. Pop. 1891, 158,890.

Jaisalmer (jī-sal-mār'), or JEYSULMEER, a state of India in Rajputāna, under the political superintendence of the Central India Agency; area, 16,447 square miles. It is mostly a sandy desert with sparsely scattered villages. Water is scarce, the wells going down to a depth of 490 feet in some cases. The climate is dry and healthy. Pop. 108,143.—JAISALMER, the capital, is situated on a rocky ridge. The palace, the Jain temples in the fort, and the houses of the

wealthy are remarkable for exquisite stone-carving. Pop. 10,965.

Jajpur, JAJPORE, town of Hindustan, on the Baitarani, in Cuttack district, Bengal. It is held in considerable sanctity among the Brahmans, who celebrate an annual fair in honour of the 'Goddess of the Waters' of Hindu mythology. Pop. 11,283.

Jalalabad'. See *Jelalabad*.

Jalal'pur, a town of Hindustan, in Gujrat district, Punjab, with a government school, and a shawl manufacture. Pop. 12,839.

Jalandhar (*jal-an-dhar'*), or JULLUNDUR, a town of Hindustan, head-quarters of district of same name, in the Punjab; with a good trade, military cantonment, excellent American Presbyterian mission school, &c. Pop. 66,202.—The district, a fertile tract between the Sutlej and the Beas, has an area of 1332 sq. miles, a pop. of 789,555. A division or commissionership has also this name; area, 12,571 sq. miles; pop. 2,421,781.

Jal'ap (so called from *Jalapa*, in Mexico, whence it is imported), the name given to the tuberous roots of several plants of the nat. order Convolvulaceæ, that of *Ipomœa purga* being the most important. This is



Jalap Plant (*Ipomœa purga*).

a twining herbaceous plant, with cordate-acuminate, sharply auricled leaves, and elegant salver-shaped deep pink flowers, growing naturally on the eastern declivities of the Mexican Andes, at an elevation of from 5000 to 8000 feet. The jalap of commerce consists of irregular ovoid dark-brown roots, varying from the size of an egg to that of a hazel-nut, but occasionally as large as a man's fist. The drug jalap is one of the most common purgatives, but is apt to gripe and nauseate. It has little smell or taste, but produces a slight degree of pungency in the mouth.

Jalapa, or XALAPA (*hâ-lâ'pâ*), a city, Mexico, department of and 52 miles north-

west of Vera Cruz. It is the residence of the wealthiest merchants of Vera Cruz, and enjoys a fine climate. The *jalap* root is found abundantly here. Pop. 1890, 18,000.

Jala'un, a town in a district of the same name in the N. W. Provinces of India, 110 miles S.E. of Agra, in a swampy and unhealthy locality. Pop. 10,057.—The district consists of a plain west of the Jumna; area, 1469 sq. miles; pop. 418,142.

Jale'sar, town of Hindustan, in Etah district, N. W. Provinces. Pop. 15,609.

Jalisco (*hâ-lis'kō*), or GUADALAJARA, a state of the Mexican Confederation, bounded on the west by the Pacific. It is chiefly mountainous, but well watered and wooded, and the climate is healthy. The soil is fertile, and wheat and barley are abundantly produced. The capital is Guadalajara. Pop. 1890, 1,250,000.

Jalpaiguri (*jal-pī-gū-rē'*), a town of Hindustan, head-quarters of district of same name, in Bengal, on the Teesta; pop. 7936.—The district lies south of Bhutan and north of Kuch Behar; area, 2884 sq. miles; pop. 581,562.

Jamaica, one of the West India Islands, 80 or 90 miles S. of Cuba, the third in extent, and the most valuable of those belonging to the British; 146 miles in length east to west, and 49 miles broad at the widest part; area, 4256 square miles. It is divided politically into three counties—Cornwall, Middlesex, and Surrey; its capital is Kingston. The island as a whole is very beautiful, and much of it is fertile. The coast is indented with a number of good harbours, of which Port-Royal or the harbour of Kingston is the most considerable. The interior is traversed by lofty mountains in all directions; the principal chain, called the Blue Mountains, reaching the height of 7270 feet. The declivities are steep, and covered with stately forests. Jamaica is well watered, having numerous rivers and springs. Earthquakes of a violent character have been frequent. The climate in the districts along the coast is, in most places, exceedingly hot, but is not on the whole unhealthy; on the high lands the air is temperate and pure, while even on the low grounds the heat is greatly moderated by the cool sea-breezes which set in every morning. There are two rainy and two dry seasons. Among the indigenous forest trees are mahogany, lignum-vitæ, ironwood, logwood, braziletto, &c. The native fruits are numerous, and many of them delicious; they include the plantain, guava,

custard-apple, pine-apple, sour-sop, sweet-sop, papaw, cashew-apple, &c. The orange, lime, lemon, mango, grape, bread-fruit tree, and cinnamon-tree have all been naturalized in the island. The chief cultivated vegetable products are sugar, coffee, maize, pimento, bananas and other fruits, ginger, arrow-root. Sweet-potatoes, plantains, and bananas form the chief food of the blacks. The cinchona-tree has been introduced, and is spreading. Of wild animals only the agouti and monkey are numerous. Domestic fowls thrive well, and cattle-raising has become profitable. Fish abound in the sea and rivers. The exports and imports have each an average value of £1,600,000; sugar, rum, coffee, dye-woods, fruit, and pimento being the chief of the former, and clothing and other manufactured goods of the latter. The government is vested in the governor, assisted by a privy-council, and a legislative council composed of fifteen members, nine elected, the others nominated *ex officio*. The revenue amounts to about £600,000 annually; the public debt is £1,590,000, the greater part of it having been expended on railways, roads, harbours, and other public works. Spanish Town and Kingston are united by railway, and the total number of miles open for traffic is about 70. The English Church is presided over by a bishop, assisted by a regular staff of parochial clergy. The Baptists, Methodists, Presbyterians, and other Protestant bodies are well represented, and there is a considerable number of Roman Catholics and Jews. Education is rapidly extending; but the general state of morality seems to be low, judging from the fact that the illegitimate births are between 50 and 60 per cent. The total population in 1891 was 639,491; of whom 14,692 were white, 121,955 coloured, and 488,624 black.

Jamaica was discovered by Columbus in 1494, in his second expedition to the New World. In half a century the cruelty of the Spanish conquerors exterminated the natives. It was taken by Cromwell in 1655, and ceded to England by the treaty of Madrid in 1670. Since the abolition of slavery the prosperity of Jamaica has greatly decreased. Of late many Chinese and coolies have been employed in agriculture. In 1865 a serious revolt broke out among the blacks at Morant Bay, and was put down with considerable severity by Governor Eyre. Since that time signs of disaffection have disappeared, and a greater state of comfort is said to prevail among the inhabitants

generally. Politically dependent on Jamaica are the Cayman Islands, and the Turks and Caicos Islands.

Jamaica, a village in New York State, Queens co. Pop. 1890, 5361.

Jamalpur (ja-mäl-pör'), a town of Hindustan, in Monghyr district, Bengal, with large workshops belonging to the E. India Railway Co. Pop. 13,213.—Also a town in Maimansingh district, Bengal, on the Brahmaputra. Pop. 14,727.

James, St., called the *Greater*, the son of Zebedee and the brother of John the evangelist. Christ gave the brothers the name of Boanerges, or *sons of thunder*. They witnessed the transfiguration, the restoration to life of Jairus's daughter, the agony in the garden of Gethsemane, and the ascension. St. James was the first of the apostles who suffered martyrdom, having been slain by Herod Agrippa A.D. 44. There is a tradition that he went to Spain, of which country he is the tutelary saint.

James, St., called the *Less*, the brother or cousin of our Lord, who appeared to him in particular after His resurrection. He is called in Scripture the *Just*, and is probably the apostle described as the son of Alphæus. He was the first bishop of Jerusalem, and in the first apostolic council spoke against those wishing to make the law of Moses binding upon Christians. The progress of Christianity under him alarmed the Jews, and he was put to death by Ananus, the high-priest, about A.D. 62. He was the author of the epistle which bears his name.

James, St., OF THE SWORD (*San Jago de la Espada*), a military order in Spain, instituted in 1170 by Ferdinand II., king of Castile and Leon, to stop the incursions of the Moors. The knights had to prove their noble descent for four generations.

James I. of Scotland, one of the Stuart kings, born in 1394, was the son of Robert III. by Annabella Drummond. In 1405 his father wished him to be conveyed to France in order that he might escape the intrigues of his uncle the Duke of Albany; but the vessel in which he was being conveyed was taken by an English squadron, and the prince was carried prisoner to London. Here he received an excellent education from Henry IV. and, to relieve the tedium of captivity, he applied himself to those poetical and literary pursuits in which he so highly distinguished himself. Robert III. died in 1406, but James was not allowed

to return to his kingdom till 1424. Previous to his departure he married Joanna Beaufort, daughter of the Earl of Somerset, a lady of the blood royal of England. On his return to Scotland he caused the Duke of Albany and his son Murdoch to be executed as traitors, and proceeded to carry on vigorous reforms, and, above all, to improve his revenue and curb the ambition and lawlessness of the nobles. The nobility, exasperated by the decline of their authority, formed a plot against his life, and assassinated him at Perth in 1437. Besides his poem, the King's Quhair (or Book), by which he ranks high among romantic poets, two humorous poems, excellent, though coarse, are often ascribed to him—Christ's Kirk on the Green, and Peblis to the Play.

James II., King of Scotland, son of James I., when his father was assassinated in 1437 was only seven years of age. During the minority his kingdom was distracted by struggles for power between his tutors Livingston and Crichton and the great house of Douglas. In 1449 he married Mary of Guelderland. James latterly allied himself with the Douglasses, but being deprived of all real power, he resolved to free himself from the galling yoke. This he did in 1452 by inducing the Earl of Douglas to come to Stirling Castle, where he stabbed him with his own hand. He then quelled a powerful insurrection headed by the next earl, whose lands were confiscated. In 1460 he infringed a truce with England by besieging the castle of Roxburgh, and was killed by the bursting of a cannon in the 29th year of his age.

James III., King of Scotland, son of James II., was born in 1453. The kingdom during his minority was governed in turn by Bishop Kennedy and the Boyd family. During his life James was controlled by favourites. Prominent among these was Cochran, a mason, through whom one brother of James was obliged to flee the kingdom, and another was put to death. The nobles seized Cochran and five others and hanged them. Latterly a plot was formed to dethrone the king, and though many peers remained loyal to him the royal army was defeated at Sauchie, near Stirling, in 1488, the king's son being on the side of the victorious nobles. James escaped from the field, but was murdered during his flight.

James IV., King of Scotland, born 1472, son of James III., was in his sixteenth year when he succeeded to the throne, having

been voluntarily or by compulsion on the side of the nobles who rebelled against his father. During his reign the ancient enmity between the king and the nobility seems to have ceased. His frankness, bravery, skill in manly exercises, and handsome person won the people's hearts, and he ruled with vigour, administered justice with impartiality, and passed excellent laws. Henry VII., then king of England, tried to obtain a union with Scotland by politic measures, and in 1503 James married his daughter, Margaret. A period of peace and prosperity followed. French influence, however, and the discourtesy of Henry VIII. in retaining the jewels of his sister and in encouraging the border chieftains hostile to Scotland, led to angry negotiations, which ended in war. James invaded England with a large force, and himself and many of his nobles perished at Flodden Field in 1513.

James V. of Scotland, born in 1512, succeeded in 1513, at the death of his father, James IV., though only eighteen months old. His mother, Margaret of England, governed during his childhood; but the period of his long minority was one of lawlessness and gross misgovernment. James assumed the reins of government in his 17th year. He married Magdalen, daughter of Francis I. of France, and on her death Mary of Lorraine, daughter of the Duke of Guise. Henry VIII., having broken with Rome, and eager to gain over his nephew to his views, proposed an interview at York; but James never came, and this neglect enraged Henry. A rupture took place between the two kingdoms, but James was ill supported by his people, and the disgraceful rout of his troops at Solway Moss broke his heart. He died in 1542, seven days after the birth of his unfortunate daughter Mary.

James I. of England and VI. of Scotland, the only son of Mary, queen of Scotland, by her cousin Henry, Lord Darnley, was born at Edinburgh Castle in 1566. In 1567 (his mother being forced to resign the crown) he was crowned at Stirling, and his childhood was passed under the direction of the Earl of Mar, and the tuition of the famous Buchanan. He had much trouble with his nobles, a party of whom made him captive at Ruthven Castle in 1582; but a counter party soon set him at liberty. When his mother's life was in danger he exerted himself in her behalf (1587); but her execution took place, and he did not

venture upon war. In 1589 he married Princess Anne of Denmark. In 1603 he succeeded to the crown of England, on the death of Elizabeth, and proceeded to London. One of the early events of his reign was the Gunpowder Plot (which see). He soon



James I. of England.

allowed his lofty notions of divine right to become known, got into trouble with parliament, and latterly endeavoured to rule as an absolute monarch, levying taxes and demanding loans in an arbitrary manner. In 1606 he established Episcopacy in Scotland. In 1613 his daughter Elizabeth was married to the elector palatine, an alliance which ultimately brought the present royal family to the throne. He wished to marry his son Charles, prince of Wales, to a Spanish princess, but this project failed, and war was declared against Spain. The king, however, died soon after in 1625. James, though possessed of good abilities and a good heart, had many defects as a ruler, prominent among them being subservience to unworthy favourites and disregard for the kingly dignity. He was also vain, pedantic, and gross in his tastes and habits. His name is sullied by the part he played in bringing Raleigh to the block. In his reign the authorized translation of the Bible was executed.

James II. of England, second son of Charles I. and of Henrietta Maria of France, was born in 1633, and immediately declared Duke of York. During the civil war he escaped from England and served with distinction in the French army under Turenne, and in the Spanish army under

Condé. At the Restoration in 1660 he got the command of the fleet as lord high-admiral. He had previously married Anne, daughter of Chancellor Hyde, afterwards Lord Clarendon. In 1671 she died, leaving two daughters, who became successively queens of England. Having openly avowed the Roman Catholic faith, on the Test Act being passed to prevent Roman Catholics from holding public employments he was obliged to resign his command. He was afterwards sent to Scotland as lord high commissioner, where he persecuted the Covenanters. He succeeded his brother as king in 1685, and at once set himself to attain absolute power. A rebellion headed by the Duke of Monmouth (his nephew) was easily put down, and this encouraged the king in his arbitrary measures. He even accepted a pension from Louis XIV. that he might more readily effect his purposes, especially that of restoring the Roman Catholic religion. The result of this course of action was the revolution of 1688 (see *England*), and the arrival of William, prince of Orange. Soon James found himself completely deserted, and having quitted the country he repaired to France, where he was received with great kindness and hospitality by Louis XIV. Assisted by Louis he was enabled in 1689 to attempt the recovery of Ireland; but the battle of the Boyne, fought in 1690, compelled him to return to France. All succeeding projects for his restoration proved equally abortive, and he spent the last years of his life in acts of ascetic devotion. He died at St. Germain's in 1701.

James III., the Pretender. See *Stuart* (*James Edward Francis*).

James, GEORGE PAYNE RAINSFORD, English novelist, born in London in 1801. While still very young he manifested a considerable turn for literary composition, and produced, in 1822, a *Life of Edward the Black Prince*. Some years afterwards he composed his first novel, *Richelieu*, which was shown in manuscript to Sir Walter Scott, and published in 1829. Its success determined him towards fiction, and a series of novels, above sixty in number, followed from his pen in rapid succession, besides several historical and other works. Among them may be mentioned *Darnley*, *De L'Orme*, *Philip Augustus*, *Henry Masterton*, *Mary of Burgundy*, *The Gipsy*, *History of Chivalry*, *Life of Charlemagne*, &c. Latterly he accepted the office of British consul, first at Richmond,

Virginia, and afterwards at Venice, where he died in 1860.

James, HENRY, American novelist and essayist, born in New York 1843. He has lived much on the European continent and in England. His novels and tales, which depend for their interest on the portrayal of character rather than on incident, are numerous. Among them are: *Daisy Miller*, *A Passionate Pilgrim*, *Roderick Hudson*, *The Portrait of a Lady*, *Tales of Three Cities*, *The Bostonians*, *Siege of London*. Mr. James has also written the life of Hawthorne in the *English Men of Letters* series, *French Poets and Novelists*, &c.

Jameson, ANNA, authoress and art-critic, maiden name Murphy, was born in Dublin in 1797, and died in 1860. Among her works are: *The Diary of an Ennuyée*; *Memoirs of the Early Italian Painters*; *Winter Studies and Summer Rambles in Canada*; *Sacred and Legendary Art*; *Legends of the Madonna*; *The Scriptural and Legendary History of our Lord and his Precursor*, *John the Baptist*.

Jamesone, GEORGE, called by Walpole the *Scottish Vandyck*, the son of an architect at Aberdeen, was born there in 1586. He studied under Rubens at Antwerp, where he had Vandyck as a fellow-pupil. Returning to his native country in 1628, he became the most famous portrait-painter that Scotland has ever possessed, at least till recent times. He also painted historical pieces and landscapes. His excellence consists in delicacy and softness of shading, and a clear and beautiful colouring. He died at Edinburgh in 1644.

James River, a river of the U. States, in Virginia, which passes the towns of Lynchburg and Richmond, and communicates, through Hampton Roads and the mouth of the Chesapeake Bay, with the Atlantic. Its general course is south of east, and its length is 450 miles. The first English settlement in America was formed at Jamestown, 32 miles from the mouth of this river, in 1607.

James's Bay, the southern extension of Hudson's Bay, called from Captain James, who wintered here in 1631-32 while trying to find the N.W. passage. It has numerous rocks and islands, and its navigation is dangerous.

James's Powder, a patent medicine, in which antimony is the most important ingredient.

Jamestown, a handsome town of the U.

States, in Chautauqua county, New York, on the outlet of Chautauqua Lake, which supplies water-power, and is employed in several mills. It has manufactories of woolens, alpaca, &c. Pop. 1890, 16,038.

Jamieson, REV. JOHN, a Scotch philologist and theologian, was born at Glasgow 1759, educated for the ministry among the Antiburgher Seceders, and after having been settled for a time in Forfar, removed in 1797 to Edinburgh, where he spent the remainder of his life, and died in 1838. The work by which he is chiefly known is his *Etymological Dictionary of the Scottish Language* (1808-9; Supplement 1825), highly valuable as an extensive collection of Scotch words, phrases, and customs.

Jammu, JAMU, or JUMMOO, a portion of Cashmere (which see).

Jamna. See *Jumna*.

Jamno'tri, or JUMNOUTRI, a celebrated place of pilgrimage in Hindustan, in the province of Garhwal, 185 miles N.N.E. of Delhi, at the source of the Jumna, with hot springs 10,849 feet above sea-level.

Jamuna (ja-mu-nā'), the name of several rivers of Northern India, the chief being the lower section of the Brahmaputra, and that which connects it directly with the Ganges.

Janesville, a city of the U. States, in Wisconsin, on both sides of Rock River, with active trade and manufactures. Pop. 10,836.

Janin (zhā-nā), **JULES GABRIEL**, French critic, and author of a number of novels and other works, was born in 1804, and died in 1874. He devoted himself to journalism at an early period, and from 1830 till his death he was connected with the *Journal des Débats*. In 1870 he was made a member of the French Academy. His first novel, *L'Âne Mort et la Femme Guillotinée*, appeared in 1829, and was quickly followed by the *Confession*; *Barnave*, a political novel; *Contes Fantastiques*; *Contes Nouveaux*. Among other works of his are *Voyage en Italie*; *Histoire de la Littérature Dramatique*; *Béranger et son Temps*; &c.

Janina, JOANNINA (yán'i-nà, yo-àn'i-nà), a town in Turkey in Europe, capital of Albania, 425 miles W.S.W. Constantinople, beautifully situated on the margin of a lake stretching along the greater part of its western shore. It has declined since the time when the notorious Ali Pasha resided here. Its fortress and splendid seraglio, built on a promontory jutting down into the lake, are now in ruins. Pop. 26,000.

Jan'izaries (Turkish, *Jeni-tcheri*, new soldiers), an Ottoman infantry force, somewhat analogous to the Roman prætorians, part of them forming the guard of the sultan. They were originally organized about 1330, and subsequently obtained special privileges, which in time became dangerously great. The regular janizaries once amounted to 60,000, but their numbers were afterwards reduced to 25,000. The irregular troops amounted to 300,000 or 400,000. Their power became so dangerous and their insurrections so frequent that several unsuccessful attempts were made to reform or disband them. At various times sultans had been deposed, insulted, and murdered by the insurgent janizaries. At last, in June, 1826, they rebelled on account of a proposal to form a new militia, when the sultan, Mahmoud II., having displayed the flag of the Prophet, and being supported by their aga or commander-in-chief, defeated the rebels and burned their barracks, when 8000 of them perished in the flames. The corps was abolished, and a curse laid upon the name. As many as 15,000 were executed, and fully 20,000 were banished.

Jan-Mayen (yân-mī'en), a small volcanic island in the Arctic Ocean, 150 miles from the coast of East Greenland. In Beerenberg, an extinct volcano, it rises to the height of 6870 feet. The island was discovered in 1611 by the Dutch navigator Jan Mayen, and was an Austrian polar station for scientific observations in 1882-83.

Jansen (yân'sen), CORNELISZ, usually known as *Jansenius*. See *Jansenius*.

Jan'senists, JAN'SENISM, the sect or party and its doctrines which owed their origin to the teaching of Jansenius (which see). In his great work *Augustinus*, published in 1640, Jansenius maintained the Augustinian doctrine of free grace, and recommended it as the true orthodox belief, in opposition to the semi-Pelagianism of the Molinists. The book was condemned by Urban VIII. in 1642, in the bull *In Eminenti*; but its doctrines were supported by many distinguished French and other theologians, and the scholars of the Port Royal, namely, Nicole, Pascal, and Antoine Arnauld, undertook the defence of Jansenism. Another bull, in which the pope (1653) particularly condemned five propositions from the *Augustinus*, also met with a strong opposition. In 1656 Alexander VII. issued a special bull by which the Jan-senists were compelled either to recant or secede from the Roman Church. It was

found impossible to force them to an unconditional subscription of this bull; and in 1668 an agreement with Clement IX., by which a conditional subscription was permitted, obtained for them a temporary repose. The party stood its ground under the protection of Innocent XI. (died 1689), who favoured them as much as Louis XIV. and the Jesuits opposed them. Father Quesnel's *Moral Reflections on the New Testament*—the most universally read book of this period—gave it new support, but also led to the bull *Unigenitus* (in 1713), which condemned 101 propositions from the *Reflections*. This bull excited much indignation in France, and was strongly resisted; but the Jansenists were rigorously persecuted unless they accepted the bull unconditionally. In consequence great numbers emigrated to the Netherlands, and their power as a party rapidly declined. This was hastened from 1731 by the fanatical excesses of many Jansenists, especially of the Convulsionists (which see) and others, which encouraged ridicule, favoured repressive measures, and ultimately extinguished the Jansenists as a party in France. As a sect, however, they still survive in the Netherlands, having a membership of about 8000. They call themselves, by preference, the *disciples of St. Augustine*. Each bishop on his appointment notifies his election to the pope, and craves confirmation. The non-acceptance of the bull *Unigenitus*, however, has caused all their advances to be rejected, and as they have rejected the doctrine of the immaculate conception and the decrees of the Vatican Council, they stand further apart than ever from the orthodox Catholic Church, though between them and the Old Catholics there are friendly relations.

Janse'nius, CORNELIUS (properly CORNELISZ JANSEN), a Dutch theologian. He studied at Utrecht, Louvain, and Paris; secured a professorship at Bayonne; returned to Louvain in 1617, where he obtained the degree of doctor, and took a prominent part in the affairs of the University. He was appointed professor of Scripture in 1630, and was promoted to the bishopric of Ypres in 1636. In this city he died of the plague in 1638, leaving an unblemished reputation for piety and purity of morals. He had just completed his great work, the *Augustinus*, a book which gave rise to a great religious controversy. See *Jansenists*.

Janssens (jâns'sens), ABRAHAM, Dutch historical painter, born about 1569, died about 1632. He was the contemporary and

rival of Rubens, though the place which he occupies beside him is very subordinate. He is chiefly admired for his colouring and accuracy of design. Many of his pictures are in the Flemish churches, while others are in the galleries of Munich, Vienna, Berlin, and Dresden.

Janua'rius, Str., Bishop of Benevento, was beheaded at Puzzuoli in the beginning of the 4th century, a martyr to the Christian faith, and is honoured as the patron saint of the people of Naples, where his body lies buried in the crypt of the cathedral. His head, with two phials of his blood, are preserved in a separate chapel. These phials are brought near the head of the saint on three festivals each year, notably Sept. 19, the anniversary of the martyrdom. On these occasions, if the blood becomes of a clear red colour and moves briskly in the phial, the patron saint is said to be propitious, but by remaining congealed it betokens disaster.

Jan'uary, the first month of the year, consisting of 31 days. It was by the Romans held sacred to Janus, from whom the name was derived. The Roman year originally began with March, and consisted of only ten months. Numa is said to have added January and February. See *Calendar*.

Janus, an ancient Latin divinity, after whom the first month of the year was named. He was held in great reverence by the Romans, and was represented with two faces, one looking forward, the other backward. All doors, passages, and beginnings were under his care. His principal festival was New Year's Day, when people gave each other presents. The temple of Janus, which was open in time of war and closed in time of peace, was shut only three times in the long space of 700 years—once in the reign of Numa, again after the first Punic war, and the third time under the reign of Augustus A.U.C. 744. Vespasian also closed it in A.D. 71.

Japan', an island empire in the North Pacific Ocean, lying off the east coast of Asia. It comprises four large mountainous and volcanic islands; viz. Hondo, Kiushiu or Kiusiu, Shikoku or Sikok, and Yesso, besides many other islands and islets, and in particular the Loo-Choo or Riu-kiu and the Kurile groups. The largest island, Hondo or Nippon, is 800 miles long, and from 50 to 100 miles broad. By the Japanese Nippon or Nipon is employed to describe the whole empire. The name 'Jipun,'

altered to Japan, is the Chinese designation, and it first became familiar to Europeans. The official return for 1891 gives Japan an area of 147,655 square miles. Population in 1891, 40,453,461.

Physical Features.—The Japanese islands form part of the line of volcanic action commencing with the Aleutian Isles and terminating in the islands of south-eastern Asia. The coasts of the larger islands are extremely irregular, being deeply indented with gulfs, bays, and inlets, which form magnificent harbours. The surface also is generally uneven, and in many instances rises into mountains of great elevation. The island of Hondo is traversed throughout its whole length by a chain of mountains, the highest peak being Fusi-yama (12,230 feet), a dormant volcano covered with perpetual snow. The volcanic vents are numerous in Yesso, Hondo, and Kiusiu, and earthquakes are frequent. The minerals comprise copper, lead, iron, antimony, and sulphur; gold and silver are found, though not to a great extent. Coal is mined in various parts. The rivers are of no great length; Tonegawa, the longest, is only about 172 miles. Biwa, in the south of Hondo, is the principal lake, being some 50 miles in length, with an extreme breadth of 20 miles. The harbours most frequented by foreigners are the treaty ports of Yokohama, Hiogo (or Kobé), Nagasaki, Hakodate, Niigata, and Osaka.

Climate.—The climate ranges from an almost Arctic cold in the north to a nearly tropical heat in the south. In the island of Yesso winter begins about October and continues to April, its course being marked by severe frosts and snowstorms; while in Yokohama, again, the winter is genial, with a bright sky, and a temperature much like England. From July to September the thermometer often ranges as high as 95° in the shade.

Products.—The vegetation of Japan is very varied, in consequence of its wide range of temperature. Rice of excellent quality, as also wheat, barley, sugar-cane, and millet are largely grown; while ginger, pepper, cotton, and tobacco are cultivated in considerable quantities. Tea has been extensively planted lately. The Japanese are skilful gardeners, and the fruits raised include strawberries, melons, plums, persimmons, figs, loquats, and oranges. Of flowers and flowering shrubs the camellia, azalea, hydrangea, lilies, peonies, the

JAPAN.

chrysanthemum, daphne, and wistaria are indigenous. The forests are extensive; in the south the palm, banana, and bamboo flourish; while in the north, cedar, pine, maple, camphor, and the *kadsi* or paper-tree are abundant. The chief domestic animals are the horse, which is small and hardy; the ox, which is used as a beast of burden; the dog, which is held sacred; and the cat, which is of a short-tailed species. Rabbits and guinea-pigs are household pets. Bantam fowls, chickens, ducks, and pigeons are reared for food. Of the wild animals, deer are numerous in the north, bears are to be found in Yesso, while boar, wolves, badgers, foxes, monkeys, and hares are not uncommon. Birds are plentiful; falcons, pheasants, ducks, geese, teal, storks, pigeons, ravens, larks, pelicans, cranes, herons, &c. Fish is one of the chief foods, the principal varieties being salmon, cod, herring, sole, and mullet. There are also tortoises, lizards, scorpions, and centipedes; and of the insect tribes there are white-ants, winged grasshoppers, and several beautiful varieties of moths. A considerable number of the Japanese animals are the same as those of Britain, or little different.

People.—The Japanese may be regarded as belonging to the great Mongolian family, though ethnologists recognize more than one element in the population. They are generally distinguished by broad skulls and high cheek-bones; small black eyes, obliquely set; long black hair, and a yellow or light-olive complexion; some are good-looking, and many are well-made, active, and nimble. They are a frugal, skilful, persevering, courageous race, who combine these characteristics with much frankness, good humour, and courtesy. A Japanese gentleman's dress is a loose garment made of silk, gathered in at the waist by a girdle, and extending from neck to ankle; while over this is thrown a wide-sleeved jacket. In the country a short cotton gown is worn, while the lower classes generally wear but scant clothing. The hair is shaved off the front part of the head, while on the back and sides it is gathered up into a knot and fastened with long pins. As regards both clothing and hair-dressing the women very much resemble the men. They also paint and powder themselves to excess. Polygamy is not practised, but a husband can have as many concubines as he can afford. The Japanese are a holiday-loving people, and delight in the theatre. Their two prin-

cipal religions are Buddhism and Shintoism. The chief observances of Shintoism are ancestral worship and sacrifice to departed heroes. Buddhism is the popular religion. A considerable number of Christian missionaries are now actively engaged in the country.



Japanese Work-people.

The Japanese language is dual in its nature. Originally a polysyllabic Mongolian tongue, it has been greatly enriched by the addition of many Chinese words, the latter being much used by the literary and governmental classes. The literature of Japan is extensive, and includes all departments—historical, scientific, biographical, but is especially copious in poetry and romance. Contact with Europe has affected literary production; European and not native writings are now mostly read.

Industries and Trade.—In native and imitative manufactures the Japanese are exceedingly ingenious. Their artistic treatment of copper, iron, bronze, silver, and gold is of the finest; while in stone carvings, mosaics, wicker, tortoise-shell, crystal, leather, and especially in wood lacquer-work, they are skilful in the highest degree. Of textile fabrics they excel in cotton-goods, crapes, camlet, brocades, but chiefly in figured silk. Paper is largely made, and its uses—from a house to a handkerchief—are manifold. Japanese decorative art is remarkable for patient but facile treatment of bird, beast, and flower; the absence of perspective and chiaroscuro seems even to add to its effect. The modern art

productions, however, have been debased by imitations of bad European work. The chief export is silk, tea coming next, while the imports are mostly textile fabrics, sugar machinery, &c. The exports of Japan for 1890 were \$55,791,847; the imports, same year, \$81,670,354. The standard money unit is the gold *yen* or dollar, nominal value 4s., divided into 100 *sen*s. The coinage consists of gold, silver, and copper pieces, from the value of 20 *yens* to $\frac{1}{10}$ *sen*. There is also a paper currency. The principal weight is the picul = 133 lbs. avoirdupois.

Government, &c.—The government of Japan till recently was an absolute monarchy, but a new constitution was proclaimed in February, 1889, providing for the establishment of a house of peers, partly hereditary, partly elective, partly nominated by the emperor or Mikado (as the ruler is called), and of a house of commons of 300 members, elected by all men 25 years of age and paying taxes to the amount of 25 dollars annually. There is also a cabinet, which includes the prime-minister and the statesmen at the head respectively of the foreign office, the treasury, war, navy, education, public works, religion, justice, and the imperial household. There are resident ministers in most European countries and in the United States. Railways are now used over a length of more than 700 miles, with nearly 7000 miles of telegraph-line, while the postal system throughout the empire is excellent. Education is compulsory, the school age being from 6th to 14th year. There is a university at Tokyo, with affiliated colleges. Conscription is the rule, and the army numbers 60,000 men in peace, with a war establishment of 185,000. The navy numbers 35 vessels; also 26 torpedo boats. The revenue and expenditure for 1892 were estimated at over \$75,000,000 each; the national debt is \$305,727,816.

History.—The Japanese profess to have an accurate chronology from 660 B.C., but little confidence can be placed in their annals previous to the 10th century after Christ. A long line of emperors or Mikados reigned over Japan, but for some six hundred years all real power was in the hands of the *Shogun* or chief minister. Japan was first made known to Europe by Marco Polo, under the title of Zipangu. In 1542 it was visited by Mendez Pinto, representing the Portuguese; and in 1549 the Jesuit missionary, St. Francis Xavier, arrived and converted many of the natives to the Church of

Rome. From the overbearing character of the Portuguese traders on the one hand and the jealousy of the Japanese priests, an edict was issued excluding missionaries from the country, and in 1640 the Portuguese were finally expelled. The Dutch East India Company established a trading settlement in 1600, which has continued to the present day. In 1854 the first modern treaty was made with the United States, and in the same year another was concluded on behalf of Great Britain. By these certain trading privileges were granted, but a more important treaty with Britain was secured by Lord Elgin in 1858, whereby five ports were fully opened to trade. These treaties had been signed by the Shogun, and had given offence at the Mikado's court, where the policy was 'to expel the barbarian.' A movement to abolish the Shogunate was, therefore, planned in the winter of 1867; and in the war which followed the Mikado was successful, so that the whole imperial authority came into his hands. A complete change now took place in the treatment of Europeans. All former treaties were ratified and extended, while the Japanese rapidly became converted to western ideas, both political and social. So much is this the case that Old Japan will soon be lost in this new 'land of the rising sun.' In 1891 earthquakes destroyed many thousands of lives.

Japan Clover (*Lespedeza striata*), a perennial plant with trifoliate leaves, indigenous to China and Japan. Introduced to South America about 1850, it has spread with great rapidity, and is held in favour by many stock-breeders, as the young shoots are greatly relished by cattle.

Japan-current. See *Kuro Siwo*.

Japan-earth. See *Catechu*.

Japaning is the act of applying varnish to such articles as wood, metal, leather, and *papier-maché*, in imitation of the lacquered work of Japan and China. The article to be japanned, being made thoroughly dry, is first brushed over with two or three coats of seed-lac varnish to form the *priming*. The next coat of varnish is mixed with the *ground tint* desired, and where a design is intended it is now painted with colours. The whole is then covered with additional coats of varnish, which are dried and polished as applied. Shell-lac varnish or mastic varnish is employed, unless where the fineness or durability of the work requires the use of copal dissolved in alcohol. See *Lacquering*.

Ja'pheth, the second son of Noah (Gen. ix. 24). His descendants, according to Gen. x. 5, peopled the isles of the Gentiles, and thus Japheth is often considered the ancestor of most European races.

Japura (*hà-pö'rà*), or **CAQUETA** (*kà-kā'tà*), a large river of South America, an affluent of the Amazon. It has its sources in the mountains of Colombia and its whole length is upwards of 1000 miles, the last 350 being in Brazilian territory. The navigation is interrupted by a great cataract, which occurs in lat 1° 10' s.; lon. 72° 20' w.

Jar'dine, **SIR W.**, a practical zoologist of high and varied attainments, was born in Edinburgh 1800, and died 1874. He is best known as the editor of the celebrated Naturalists' Library. His chief works comprise a history of the British Salmonidæ, the Ichthyology of Annandale, &c.

Jardinière (*zhâr-dên-yâr*), an ornamental stand for growing plants, used in decoration of an apartment.

Jar'gon, **JAR'GOON**, a mineral, usually of a gray or greenish-white colour, in small irregular grains, or crystallized in quadrangular prisms surmounted with pyramids, or in octahedrons consisting of double quadrangular prisms.

Jargonelle', a variety of early pear, of fine quality, so called from resembling in colour the mineral jargon.

Jarl (*yârl*), a word of Scandinavian origin, the same as *earl*, and applied in the early history of the northern European kingdoms to the lieutenants or governors appointed by the kings over each province.

Jarnac (*zhâr-nâk*), town of France, in the department of and on the river Charente, where a battle was fought March 13, 1569, between the Catholics under the Duke of Anjou, and the Huguenots under the Prince of Condé. The Protestant forces were defeated. Pop. 3720.

Jarool'. See *Blood-wood*.

Jaroslau (*yâ'ro-slou*), a town, Austria, Galicia, on an affluent of the Vistula, 62 miles w.n.w. of Lemberg, with a castle and a handsome cathedral, manufactures of woollens and linens, &c. Pop. 12,422.

Jaroslav (*yâ'ro-slaf*), a town in Russia, capital of the government of same name, on the Volga, 162 miles north-east of Moscow. It is the see of an archbishop, and has a theological seminary and a college. Pop. 23,032.—The government has an area of 13,000 square miles and a population of 1,095,636. The surface is generally flat,

and in several places very marshy. It is watered by the Volga and other rivers. The soil is by no means fertile, and the grain produced falls short of the home consumption.

Jar'rah, a timber-tree of W. Australia the *Eucalyptus margināta* (or *rostrāta*), yielding a very durable wood, useful for railway-sleepers, jetties, &c., not being liable to the attack of the white-ant and the ship-worm.

Jar'row, a town of England in Durham, on the Tyne, 6 miles below Gateshead. Its rapid growth from a village to a large town is due to the development of its ship-building and iron-smelting industries. The town contains a mechanics' institute, an infirmary, and the church of St. Paul's, where the venerable Bede was buried, and where some of his relics are still preserved. It gives name to a parliamentary division of Durham. Pop. 1891, 33,682.

Ja'sher, **BOOK OF**, a lost Hebrew work, twice mentioned in the Bible (Josh. x. 13 and 2 Sam. i. 18), and about which various conjectures have been made. Some authorities suppose that it was a series of annals; others that it was a Hebrew minstrelsy celebrating the exploits of the national heroes. Whatever its contents may have been, it seems from the specimens preserved to have been metrical in form.

Jasmin (*zhâs-man*), **JACQUES**, or **JAQUOU JAUSMIN**, the chief modern Provençal poet of France, inheritor of the language as well as the spirit of the troubadours, was born in 1798, and died in 1864. Himself of humble parentage, and by trade a hair-dresser, all his poems and songs are written in the peasants' patois of the Garonne. His poetry deserved and acquired more than a local celebrity, and was warmly welcomed not only in Southern France, but throughout the whole of Europe. His principal works are *Lou Chalibari* (The Charivari), a mock-heroic poem; *L'Abuglo de Castel Cuillé* (The Blind Girl of Castel Cuillé), his master-piece in poetry, which has been translated by Longfellow; *Las Papillotos de Jasmin* (The Curl-papers of Jasmin); and *Lous dous Frays-bessous* (The Two Twin-Brothers), 1847.

Jas'mine, **JAS'MIN**, the popular name of plants of the genus *Jasminum*. They are elegant, branched, erect or climbing shrubs, with imparipinnate, trifoliate, or simple leaves, and (usually cymose) white or yellow flowers, from some of which delicious per-

fumes are extracted. There are about 100 species, most of them Asiatic; some occur in south and a few in tropical Africa, while one is a native of Southern Europe. The



Common White Jasmine.

Carolina jasmine is *Gelsemium nitidum*. Also written *Jessamine*.

Jason, in Greek legend, king of Iolcos in Thessaly, celebrated for his share in the Argonautic expedition. On his return to Iolcos with Medea as his wife, he avenged the murder of his parents and his brother by putting Pelias to death. Unable to retain possession of his throne, however, he fled to Corinth, where, after some time, he married Glauce (or Creusa), daughter of the king, and put away Medea and her children. (See *Medea*.) Different accounts are given of his death. See *Argonauts*.

Jasper, an impure opaque coloured quartz, less hard than flint or even than common quartz, but which gives fire with steel. It is entirely opaque, or sometimes feebly translucent at the edges, and presents almost every variety of colour. It is found in metamorphic rocks, and often occurs in very large masses. It admits of an elegant polish, and is used for vases, seals, snuff-boxes, &c. There are several varieties, as red, brown, blackish, bluish, Egyptian.—*Agate jasper* is jasper in layers with chalcedony.—*Porcelain jasper* is only baked clay.

Jassy (yash'shi), a town of Roumania, in Moldavia, on the Bachlui, several miles from the Pruth. It is built on two hills, and covers a large space, the houses being generally provided with gardens. It has a university, a museum with a public library,

a theatre, several hospitals, fine hotels and shops. There are few manufactures, but the trade is of some importance, and a great deal of business is done at the fairs. Pop. 90,000, 55,000 being Jews.

Jasz-Berény (yäs-be-rāny'), a market town of Hungary, 38 miles E.N.E. of Budapest, on both sides of the Zagyva. Pop. 21,507.

Ja'taka, a celebrated Pali work of about the 3d century A.D., containing legends relating to the birth of Buddha, and much prized by the Buddhists.

Jatamansi, an East Indian name for spikenard.

Jateorhiza (jā-ti-o-rī'za), the genus of plants to which calumba belongs.

Jativa (hā-tē'vā), a city of Spain, province of and 36 miles S.S.W. Valencia, near the confluence of the Guardamar and Albayda. Pop. 13,168.

Jat'ropha, a genus of woody plants with alternate stipulate leaves and cymes of small flowers, belonging to the natural order Euphorbiaceæ, for the most part inhabiting the tropical parts of America. The roots of *J. Manihot* yield manioc or cassava. *J. elastica* yields an elastic substance used as caoutchouc.

Játs (jäts), an Indian race occupying a large part of the Punjab and half of the Rajput states. They are a hardy, industrious, agricultural people, rearing large flocks of camels in the desert districts of Sind. Their religion varies with locality, and embraces Brahmanism, the Sikh tenets, and Mohammedanism.

Jauer (you'ër), a town of Prussia, province of Silesia, 10 miles S.S.E. Liegnitz, on the Neisse, with manufactures of cigars, cloth, worsted, leather, &c. Pop. 11,178.

Jaundice is not specifically a disease, but is rather the indication of bile-colouring matter in the blood, shown by a greenish-yellow colour of the skin. This is caused either by disease of the liver, which prevents that organ from separating bile pigments from the blood, or is due to some obstruction in the bile ducts leading to the intestines. The accompanying symptoms are constipation, colic pains, nausea, headache, languor, and itching of the skin. The yellow colour first appears on the whiter parts of the body, as the eye, the neck, the chest, &c. From being a mere tinge of yellow it deepens to a dark orange, and sometimes greenish hue. Whether these symptoms are trifling or serious depends

JAUNPUR—JAY.

entirely on the cause; due attention to diet, with mild laxative medicines, will often prove beneficial. Besides the milder, there is also a malignant form of jaundice which usually ends fatally.

Jaunpur (joun-pör'), a town of India, N. W. Provinces, on the river Gúmí, over which there is a fine bridge. It is an old town, and has some beautiful specimens of architecture. Pop. 44,845.—The district has an area of 1554 sq. miles; pop. 1,209,663.

Jaunting-car, a light car used in Ireland in which the passengers ride back to back on folding-down seats placed at right angles to the axle, the occupants having their feet near the ground. There is generally a 'well' between the seats for receiving luggage, and a seat in front for the driver.

Java, an island in the Indian Archipelago, the chief of the Dutch colonial possessions; capital, Batavia. It is separated by the Strait of Sunda from Sumatra, and by that of Bali from Bali, and extends about 630 miles from east to west; greatest breadth, 126 miles; area, 48,830 square miles. Java and the smaller adjacent island of Madura are divided into twenty-two provinces or residencies, of which the population in 1890 amounted to 21,974,161. Volcanic mountain chains running from east to west, and rising to such points as Semiru (12,250 feet) and Slamát (11,320 feet); low-lying marshy tracts in the north, with such safe land-locked harbours as Batavia and Surabaya; in the south a rocky unbroken coast washed by the heavy surf of the Indian Ocean,—these are its chief characteristics. Volcanic eruptions are not infrequent, the latest being in 1883, when much damage was done to life and property. The mountains, covered with large forests, are separated by exceedingly fertile valleys. With the exception of marshy tracts the climate is as salubrious as that of any other intertropical country; and the more elevated regions are even healthy. The vegetation is varied. Rice is the chief cereal, but coffee and sugar are the staple products; spices are also grown, and some cotton is raised. Other products are cochineal, pepper, tobacco, tea. The famed poison-tree, or upas (*Antiaris toxicaria*), is a noted Javanese plant. The forests consist mainly of teak. There are about 100 kinds of mammalia inhabiting Java. These include the one-horned rhinoceros, tiger, panther, tiger-cat, wild hog, several kinds of deer, several monkeys (but not

the orang-utan), and enormous bats. The ox, the buffalo, the goat, are among the domestic animals. Birds are numerous. Serpents of a venomous kind are frequent, as also are crocodiles, lizards, and the land tortoise. The native population belong to the Malay race, and are brownish-yellow in complexion, with long thick black hair. They are sober, patient, and industrious, but quick to avenge affront. In religion they are nominally Mohammedan. The great mass are devoted to agriculture, living in villages each governed by a native chief. Most of the land belongs to the Dutch government, which obtains a large revenue from the island. Till lately it was the custom to utilize the forced labour of the natives in what was called the 'culture system.' The principal exports are coffee, sugar, tea (the production of which is constantly increasing), tin, rice, cinchona, indigo, spices, tobacco, hides, and india-rubber. In five recent years the average imports were £12,830,000; exports, £16,000,000. Railways have been introduced, and telegraphic communication is developing rapidly. A governor-general rules Java and the whole of the Dutch East Indies. The history of Java is unknown previous to the 11th century, when the Hindus founded a dynasty and converted the natives to Brahmanism. This was overthrown by an invasion of the Mohammedans in 1478. Islamism was succeeded by the Portuguese, who arrived in 1511. They were followed by the Dutch in 1595, who wrested from them the supremacy.

Javelin, a short spear thrown from the hand, and in ancient warfare used by both horse and foot soldiers. The Roman javelin (*pilum*) had a barbed iron head and a wooden shaft, the whole length being nearly 7 feet.

Jaxartes. See *Sir-Daria*.

Jay, a genus and sub-family of birds belonging to the family of the crows (*Corvidæ*). The jays have the upper mandible or bill notched or indented near its tip, and the feathers on the top of the head are erectile, and can be elevated at will, to form a kind of crest. These birds are readily domesticated, possess a harsh grating note, and are admirable mimics. They feed on fruits, seeds, worms, insects, and the eggs and young of other birds, &c. The common or European jay (*Garrulus glandarius*) is the size of an ordinary pigeon, the general colour is a light brown inclining to red, whilst the larger or primary wing-feathers are of a brilliant blue, marked out by bands of black.

The blue colour reaches its highest brilliancy in the North American blue jay (*Garrulus (Cyanurus) cristatus*), which otherwise closely imitates its European representative both in size and habits. The blue jay is



Common Jay (*Garrulus glandarius*).

exceedingly well known in the United States. Another American jay is the Canada jay or 'whiskey jack' (*Perisoreus canadensis*), a bird of rather sombre colouring, but of the bold, noisy, and active habits of others of the jays.

Jay, JOHN, American jurist and statesman, born in 1745, died in 1829. In 1766 he was admitted to the bar, and in 1774 was chosen a delegate to the first American Congress, which met at Philadelphia. He was a member of the second Congress, and in 1778 he was appointed minister plenipotentiary to Spain. In 1782 he was appointed one of the commissioners to negotiate a peace with Britain, and, along with Adams and Franklin, concluded a treaty with the British. Returning to the United States he was appointed head of foreign affairs, and afterwards chief-justice. In 1794 he was sent as envoy extraordinary to Great Britain, and concluded a treaty which has been called after his name, and by which \$1,000,000 was given to Americans as compensation on account of the illegal captures by British vessels, the eastern boundary of Maine was fixed, &c.

Jebb, RICHARD CLAVERHOUSE, LL.D., one of the first of living Greek scholars, was born at Dundee, August 27, 1841. Educated at St. Columba's College, Dublin, the Charterhouse, London, and Cambridge University, he graduated as senior classic at Trinity College in 1862. In 1869 he became public orator of that university, and in 1875 he was called to fill the Greek chair in Glasgow University, which he resigned in 1889, on being appointed Greek professor at Cam-

bridge. His best-known works are *The Attic Orators*; *Modern Greece*; a *Life of Richard Bentley*; *Homer: an Introduction to the Iliad and Odyssey*; and his admirable edition of *Sophocles* (as yet incomplete).

Jedburgh, a royal burgh of Scotland, in Roxburghshire, on the Jed. Pop. 3402.

Jefferson, JOSEPH, actor, was born in Philadelphia in 1829. After the usual career of a strolling actor in 1858 he came forward prominently as Asa Trenchard in "Our American Cousin," which ran for more than 150 nights. His favourite part is that of "Rip Van Winkle," in which his success has been phenomenal.

Jeddo. See *Yeddo*.

Jefferson, THOMAS, the third president of the United States of America, was born April 2, 1743, at Shadwell, in Albemarle county, Virginia. He studied for two years at the college of William and Mary, Williamsburg, and then commenced the study of law. In 1769 he was elected a member of the provincial legislature, and in 1775 he took his seat for the first time in Congress. It was he who drew up the draft of the Declaration of Independence, which (in a slightly modified form) was signed on July 4, 1776. In 1779-81 he was governor of Virginia. In May, 1784, Congress elected him minister plenipotentiary to France, in addition to Adams and Franklin; next year he was appointed sole minister, and his residence in Europe lasted about five years. On his return he was appointed secretary of state by Washington, an office which he continued to fill until the end of 1793, when he resigned. In 1796 he was elected vice-president of the United States; but he was seldom consulted by the president, and he was out of harmony with the government. In 1800 he was elected president. One of the public acts of his administration was the purchase of Louisiana from France, thus greatly extending the boundaries of the United States. In 1809 he retired to private life at his residence of Monticello, in Virginia, where he died on the 4th of July, 1826, the fiftieth anniversary of the Declaration of Independence, almost at the same hour as John Adams, the second president. Jefferson was the acknowledged head of the republican party from the period of its organization. He published *Notes on Virginia*, and various essays on political and philosophical subjects, and a *Manual of Parliamentary Practice*, for the use of the Senate of the United States.

Jefferson City, a town of the United States, capital of Missouri, on the river Missouri. Pop. 1890, 6742.

Jeffersonville, a flourishing town of the United States, in Indiana, on a height above the Ohio, connected with Louisville by a fine bridge. Pop. 1890, 10,666.

Jeffrey, FRANCIS, LORD, a Scottish judge and critic, was born at Edinburgh in 1773, and died in 1850. He was educated at Edinburgh high school, the University of Glasgow, and Queen's College, Oxford, and passed advocate in 1794. He took part in establishing the Edinburgh Review in 1802 (with Sydney Smith, Lord Brougham, and others), and after two numbers had been issued was installed as its editor, a position he held for twenty-six years. In 1831 he was made lord-advocate, and he sat for several years as member of parliament for Edinburgh. He was made a lord of Session in 1834, and continued during a period of sixteen years to be one of the ablest and most popular judges of the supreme court in Scotland.

Jeffrey of Monmouth. See *Geoffrey*.

Jeffreys, GEORGE, Baron Wem, an infamous English judge, commonly known as *Judge Jeffreys*, was born in 1648, and died in the Tower in 1689. Soon after commencing his professional career he was chosen recorder of London; and he was appointed, successively, a Welsh judge and chief-justice of Chester, created a baronet in 1680, and latterly appointed chief-justice of the King's Bench. He was one of the advisers and promoters of the arbitrary measures of James II.; and for his sanguinary and inhuman proceedings against the adherents of Monmouth on the 'bloody western circuit,' was rewarded with the post of lord high-chancellor (1685). On the arrival of the Prince of Orange, the chancellor, who had disguised himself as a seaman, was detected and carried before the lord-mayor, who sent him to the lords in council, by whom he was committed to the Tower.

Jehosh'aphat, son of Asa, and fourth king of Judah, 915-890 B.C. He was noteworthy in his strenuous endeavours to abolish the use of idols. Jehoshaphat denotes 'Jehovah's judgment.'

Jeho'vah (Heb. *Yahveh*), the popular pronunciation of the sacred name of God among the Hebrews, represented in the text of the Old Testament by the four consonants J (or Y), H, V, H. The Hebrews cherished the most profound awe for this

name, and this sentiment led them to avoid pronouncing it, and to substitute the word *Adonai*, which signifies *the lord*, which custom still prevails among the Jews. In some portions of the Pentateuch Jehovah is the name regularly applied to God, in others Elohim: this has led to a theory of two authors respectively for these portions. See *Elohim*.

Je'hu, the founder of the fifth dynasty of the kingdom of Israel. He was a commander in the army of Jehoram, when Elisha sent one of the 'children of the prophets' to consecrate him king of Israel at Ramoth-Gilead (B.C. 895). He immediately attacked Jehoram, whom he slew in battle, and then entered upon a work of extermination in which were slain seventy of Ahab's children, forty-two brothers of Ahaziah, king of Judah, and Hezekiah himself, as also Jezebel. He died after a reign of twenty-eight years. His name occurs more than once on the monuments discovered at Nineveh.

Jeissk. See *Ieisk*.

Jeju'num (Lat. *jejunos*, empty), the second portion of the small intestine, succeeding the *duodenum*, and so named from its generally being found empty after death. See *Intestine*.

Jelabu'ga, a town of Russia, gov. Viatka, on the Kama, with copper mining and some manufactures. Pop. 9431.

Jelalabad', a town of Afghanistan, near the right bank of the river and 75 miles E.N.E. of the town of Cabul. It was the scene of a successful resistance to an army of Afghans by a handful of British troops under Sir Robert Sale, in the winter of 1841-42. Pop. about 3000.

Jeletz. See *Ieletz*.

Jelly, a name for such substances as are liquid when warm, but which coagulate into a gelatinous mass when cold. Animal jelly is prepared from the soft parts of animals, and even from bones when sufficiently crushed. It is a colourless, elastic, transparent substance without taste or smell, and which is soluble in warm water. Analysis shows that its constituents are carbon, hydrogen, nitrogen, with a possibility of sulphur. Vegetable jelly is prepared from the juice of unripe fruit heated in a solution of water to 40° C. This extract when boiled with sugar forms a pleasant and wholesome substance. Doctors now incline to the opinion that animal jelly is less nourishing than ordinary animal food.

Jelly-fishes, the popular name of certain coelenterate animals, of the class Hydrozoa, found in the sea, and often familiarly called Sea-blubbers and Sea-nettles, from their appearance and stinging property. When in the water they present a singularly beautiful appearance, one of the most common resembling a clear crystalline bell, which swims gracefully through the water by alternately expanding and contracting its body. They are very voracious, and move upon

their prey (minute animals) with great rapidity, seizing it with their long stinging tentacles. The phosphorescence of the sea is to some extent explained by the pale light which they diffuse in the darkness. See *Medusidæ*.

Jelum. See *Jhelum*.

Jemappes (zhè-mâp), a village of Belgium, in Hainault, near Mons, on the Scheldt, celebrated as the place of the first great battle in the French revolutionary war,



View of Jelalabad.

fought November 6, 1792, when the French under Dumouriez defeated the Austrians.

Jena (yā'nà), a town of Germany, in the grand-duchy of Saxe-Weimar, 12 miles east of Weimar, on the Saale, a place of little importance except for its university, which was opened in 1558. It has in all 94 professors or lecturers, an anatomical theatre, botanical garden, zoological museum and other scientific collections, observatory, library of 200,000 volumes, and about 600 students. On 14th Oct. 1806, the Prussians (70,000 men) under Prince Hohenlohe were defeated here by the French under Napoleon (90,000 men). Pop. 12,017.

Jenikale. See *Yenikale*.

Jenisei, a river of Siberia. See *Yenisei*.

Jenner, EDWARD, an English physician, celebrated for having introduced the practice of vaccination as a preventive of the small-pox. He was born at Berkeley in Gloucestershire in 1749; studied at London under the celebrated anatomist John Hunter,

and afterwards settled in Gloucestershire as a medical practitioner. About 1776 the belief common amongst the peasants that casual cow-pox acquired in milking cows was a preventive of small-pox, caused him to direct his inquiries to the subject, and led to the introduction of the process of vaccination in 1796. His method at first met with great opposition from the medical profession, but was ultimately universally accepted both by his own and foreign nations. Parliamentary grants to the extent of over £30,000 were made to him, and congratulatory addresses were sent to him by continental monarchs. He died at Berkeley in 1823. He published an *Inquiry into the Causes and Effects of Cow-pox* (1798); *Further Observations on Variolæ Vaccinæ or Cow-pox* (1799); and a celebrated paper on the cuckoo in the *Philosophical Transactions*. See *Vaccination*.

Jenner, SIR WILLIAM, K.C.B., F.R.S., born at Chatham in 1815, was educated at

University College, London, where he graduated M.D. in 1844. He became in 1848 professor of pathological anatomy, and in 1857 of clinical medicine in the University College; in 1861 physician to the queen; in 1862 professor of the principles and practice of medicine in University College; in 1868 he was made a baronet, and in 1872 a K.C.B., in recognition of his services during the severe illness of the Prince of Wales; in 1881 he was elected president of the College of Physicians. Dr. Jenner has written a number of papers on specific diseases, and was the first to establish the difference in kind between typhus and typhoid fevers.

Jennings, SARAH. See *Marlborough, Duke of*.

Jephthah, one of the Hebrew judges, who defeated the Ammonites, but having rashly made a vow that if he was victorious he would sacrifice to God as a burnt-offering whatever should first come to meet him from his house, he was met on his return by his daughter, his only child, whom he sacrificed, in consequence, to the Lord (Judges xi. 29, 40). Some commentators have maintained that this meant devoting her to perpetual virginity in the tabernacle. Jephthah ruled six years as a judge and general (Judges xi. xii.). The sacrifice of Jephthah's daughter is the subject of Handel's last oratorio, and of a Latin drama by George Buchanan.

Jer'boa (*Dipus*), a genus of small animals belonging to the order Rodentia or Gnawers, having extremely long hind limbs, which gives them an extraordinary power of leaping, so that their movement seems more like flying than running. The fore limbs are armed with short powerful claws, with which they excavate their burrows and extract the roots on which they chiefly live. They are gregarious and nocturnal in their habits, and hibernate during the colder seasons. The jerboas are found chiefly in Asia and Northern Africa. The typical species is the Egyptian form (*Dipus egyptius*).



Egyptian Jerboa (*Dipus egyptius*).

Jereed', a wooden javelin about 5 feet long, used in Persia and Turkey, especially in mock fights.

Jeremi'ah, the second of the great prophets of the Old Testament, flourished during the darkest period of the Kingdom of Judah, under Josiah, Jehoahaz, Jehoiakim, Jeconiah, and Zedekiah. He was called to the prophetic office about 629 B.C., in the reign of Josiah, and lived to see the capture of Jerusalem by Nebuchadnezzar in 586 B.C., who offered him a home at Babylon, but he preferred to stay amongst the wretched remnant of the people left in Judah. He is said to have been stoned to death in Egypt by some of his countrymen, who were irritated by his rebukes. He wrote two Old Testament books, the prophecies of Jeremiah and the Lamentations. The text of the prophecies is in a somewhat confused state, there being no chronological order. Jeremiah wants the dignity and splendour of Isaiah, but exhibits great tenderness and elegiac beauty of sentiment. Some critics also attribute to him the book of Deuteronomy and several of the Psalms. See also *Jews*.

Jerez (or **XEREZ**) (*he-reth'*) **de la Frontera**, a town of S.W. Spain, in Andalusia, prov. of Cadiz, 16 miles N.N.E. of Cadiz. It is a well-built and flourishing town, with some handsome edifices, chiefly churches, and the Alcazar, an old Moorish castle in ruins. It is noted for its wine, well known under the name of sherry, which is exported in large quantities. Pop. 57,000.

Jerez (or *he-reth'*) **de los Caballeros** (*kā-vāl-yā'rōs*), a town of Spain, prov. Badajoz, partly surrounded by a wall, which dates from the time of the Moors. Pop. 8465.

Jer-falcon. See *Falcon*.

Jericho (*jer'i-kō*), a considerable town of ancient Judea, on a plain about 18 miles N.E. of Jerusalem, noted, especially in Solomon's time, for its balsam-gardens and its thickets of palm-trees and roses, and carrying on a flourishing trade in balsam and spices. It was the key of Palestine, and was therefore invested by the Israelites who had passed the Jordan under Joshua to conquer this country. Its site is now occupied by the small village of Riha.

Jericho, ROSE OF (*Anastatica hierochuntica*). See *Rose of Jericho*.

Jerked Beef, from the Chilian word *charqui*, beef cut into strips of about an inch thick, and dried in the sun to preserve it. It is used in Chili and other parts of South America, and has been tried in Australia.

JERKIN-HEAD — JERSEY.

When well prepared it will keep for a great length of time.

Jerkin-head, in architecture, the end of a roof when it is formed into a shape intermediate between a gable and a hip, the gable rising about half-way to the ridge, so as to have a truncated shape, and the roof being hipped or inclined backward from this level.



Jerkin-head Roof, Boscombe, Hants.

Jerobo'am, the name of two kings of Israel.—**JEROBOAM I.**, the son of Nebat, on Solomon's death (973 B.C.) was made king of the ten tribes who separated from Judah and Benjamin. He made Shechem his capital, forbade his subjects to resort to the temple at Jerusalem, and set up golden calves at the shrines of Dan and Bethel. He died in the 22d year of his reign.—**JEROBOAM II.**, the most prosperous of the kings of Israel, reigned 823–782 B.C. He repelled the Syrians, took their cities of Damascus and Hamath, and reconquered Ammon and Moab. But licentiousness and idolatry were prevalent during his reign. The authorities for the history of his time are 2 Kings, 1 Chron., Amos, and Hosea.

Jer'ome, St., full name EUSEBIUS HIERONYMUS SOPHRONIUS, one of the most learned fathers of the Latin Church, was born sometime between 331 and 345 in Dalmatia, of wealthy parents. He was baptized in Rome, went in 373 to Antioch in Syria, and in 374 retired to the desert of Chalcis, where he passed four years in severe mortifications and laborious studies. He left his solitude to be ordained presbyter at Antioch, went to Constantinople to enjoy the instruction of Gregory of Nazianzen, and in 382 returned to Rome, where his expositions of the Holy Scriptures gained many adherents, especially amongst the rich and noble ladies, two of whom, St. Marcella and St. Paula, became celebrated for their piety. St. Paula accompanied him in 386 to Bethlehem, where she founded four convents, in one of which Jerome remained till his death about 420. His Latin version of the Old Testament from the original language was the foundation of the Vulgate. He took an active part in

many controversies, notably those regarding the doctrines of Origen and Pelagius.

Jerome of Prague, a Bohemian reformer, born about 1360–70, in faith and sufferings the companion of the famous John Huss. Together they made a vigorous crusade against the dissoluteness of the clergy, the worship of relics, &c. When Huss was imprisoned in Constance Jerome hastened to his defence, but was seized and carried thither in chains (1415). After much suffering he consented to recant his heresies, but on being subjected to a new examination solemnly retracted his recantation, and made a vigorous vindication of the principles of Huss and Wickliffe. On May 30, 1416, he was burned at the stake, and his ashes thrown into the Rhine.

Jer'rold, DOUGLAS, English humorist and play-writer, born 1803, the son of the manager of the Sheerness theatre. After being for a short time a midshipman, he was bound apprentice to a printer in London. His first play, *More Frightened than Hurt* (1818), was not at first successful, but his *Black-eyed Susan* (1822) ran for 300 successive nights at the Surrey Theatre. Jerrold's subsequent dramas were the *Rent-day*, *Nell Gwynne*, the *Housekeeper*, the *Prisoner of War*, *Bubbles of a Day*, *Time Works Wonders*, *St. Cupid*, the *Catspaw*, the *Heart of Gold*, and several others. He contributed extensively to periodical literature, founding and conducting successively the *Illuminated Magazine* and *Douglas Jerrold's Shilling Magazine*; and latterly editing *Lloyd's Weekly Newspaper*. To *Punch* he contributed his inimitable *Mrs. Caudle's Curtain Lectures*, *Punch's Letters to his Son*, &c. Though a terrible master of satire and repartee his sayings had no personal malevolence. He died in 1857.

Jer'sey, the largest and most valuable of the Channel Islands, about 15 miles off the north-west coast of France; greatest length, east and west, about 12 miles; greatest breadth, 7 miles; area, 28,717 acres or 44·87 sq. miles. Its coast, particularly on the north, is extremely rugged and precipitous, is deeply indented all round, and has a number of good bays and harbours, the chief of which are St. Aubin and St. Helier. The island is fertile, abundantly wooded, and well cultivated. The climate is peculiarly mild and agreeable. Wheat is the principal cereal raised, and large quantities of grapes, peaches, melons, pears, and other fruits are exported, as also vegetables, and especially

JERSEY — JERUSALEM.

early potatoes for the London market. Cows of the famous Jersey or Alderney breed are reared and exported in great numbers. The lower classes speak a sort of old Norman French dialect, while French is the language of the upper classes and the law courts. Jersey has its own legislature, known as the 'States.' Appeals lie to the queen in council. The island is attached to the diocese of Winchester. Principal town, St. Helier. Pop. 52,455. See *Channel Islands*.

Jersey, NEW.
See *New Jersey*.

Jersey City, a town in the U. States, capital of Hudson county, New Jersey, on the Hudson, opposite New York, from which it is about a mile distant and with which it is connected by ferries. It is laid out in broad and regular streets. The manufacturing establishments are very numerous, and comprise glass works, boiler works, foundries, steel works, brew-

eries, sugar-refineries, chemical works, watch works, tobacco works, potteries, &c. Its population is largely made up of the overflow of New York. Pop. 1890, 163,003.

Jerusalem (Ar. *El-Kuds*, 'The Holy'), one of the most ancient and interesting cities in the world, in Palestine, in the Turkish province of Syria. It stands on an elevated site (about 2500 feet above the sea) within the fork of two ravines, the Valley of Jehoshaphat on the east, and the Valley of Hinnom on the south and west, while a third ravine or valley—the Tyropœon—partially traverses it from south to north. On the east side of this valley is Mount Moriah, now the Mohammedan quarter of the city, where anciently stood the palace and temple of Solomon. Immediately south of this stood

the mountain fortress of Zion, known as the City of David, and later as the Akra or Lower City. This part of the city is now waste. According to another view, however, the 'City of David' is the Upper City on the opposite or western side of the Tyropœon Valley, and to this the name of Zion is given by current tradition. This part is

where the quarter of the Armenians, the citadel, and the Protestant church now are. Of the three walls which Jerusalem latterly possessed, the first wall, that of David, was for the defence of this Upper City (the traditional, but probably not the ancient Zion). The second wall took in a considerable area on the east and north-east, while a new town or suburb, Bezetha, which grew up on the north of this, was inclosed by a third wall, built by Agrippa I. The present limits are much the same as those indicated by the third wall, only



A Street in Jerusalem.

that the old Lower City and the southern part of the old Upper City are unpopulated places outside the modern walls. Of the seven gates only five are now used. The interior of the city is much occupied by mosques, churches, and convents. The houses are substantially built of stone, and present in most cases no windows to the streets, which accordingly—generally narrow, ill-paved, and sloping to the centre—are merely long lanes with dead walls on each side of them. In the north-west quarter is the Church of the Holy Sepulchre, so called because alleged to contain under its roof the very grave in which the Saviour lay. This church, which was built by Helena, the mother of Constantine the Great, is remarkable for the richness of its decorations

and the number of pilgrims by whom it is visited. A large area in the east of the city is occupied by the inclosure known as El Haram-Esh-Sherif (The Noble Sanctuary), which is in the form of a regular parallelogram surrounded on all sides by a lofty wall. The most conspicuous building within is the Mosque of Omar, called also Kubbet-es-Sakhrah (Dome of the Rock), a splendid structure of octagonal form which occupies the site of the Jewish Temple. Amongst the notable convents are the Latin convent, and the still more extensive Armenian convent capable of accommodating 1000 pilgrims. Within the last twenty years or so a considerable improvement has taken place in the appearance of the city, as well as of the surrounding country. Among the rest hotels in which all modern conveniences and comforts may be enjoyed have been erected for the hosts of pilgrims and travellers who annually visit the place. The population is 33,850 (1886), of whom 8250 are Christians, and 20,000 Jews. The first railway to Jerusalem was opened in 1893.

Jerusalem is not mentioned by name till about B.C. 1500, when it was in the hands of the Jebusites. The lower part was wrested from them by Joshua, but the upper part continued in their possession till the time of David, who took up his residence in the stronghold of Zion, and made Jerusalem the capital of his kingdom. It reached the height of its glory under Solomon, after whose time it declined. In 586 Nebuchadnezzar took and destroyed the city after a long siege, and carried off those of the inhabitants whom the sword had spared as captives to Babylon. On the return from the captivity the temple was rebuilt, B.C. 515. The walls were not rebuilt till the time of Ezra and Nehemiah, 455 B.C. The city had regained a considerable degree of prosperity, when it was sacked and its walls levelled by Antiochus of Syria in 168. Under the Maccabees Jerusalem, in common with Judea, became once more independent, 165 B.C. It next became tributary to Rome, and had been greatly beautified and enriched with a fine new temple by Herod when the Saviour appeared. In A.D. 66 Jerusalem was taken by a party of Jews who had revolted against Rome. Titus, the son of the emperor Vespasian, regained it in the year 70, after a terrible siege; the temple was burned, and the city razed to the ground. In 131 Hadrian ordered the city to be rebuilt, but it continued

depressed till the beginning of the 4th century, when, Rome having become Christian, Jerusalem shared in the benefit, and assumed the appearance of a distinguished Christian city, under the fostering care of Helena, mother of Constantine the Great. This period of prosperity, prolonged by a succession of Christian emperors, was suddenly terminated in 636, by the conquest of the Mohammedans, under the Arabian Caliph Omar. In 1099 the Crusaders took Jerusalem by storm, and made it the capital of a Christian monarchy, which with difficulty maintained its existence till 1187, when it was finally overthrown by Saladin. In 1517 Jerusalem fell into the hands of the Turks, and has remained to this day a part of the Ottoman empire.

Jerusalem Artichoke. See *Artichoke*.

Jerusalem Cherry, a name given to two shrubs of the genus *Solanum* (potato genus) cultivated as ornamental plants.

Jervis, SIR JOHN. See *Vincent, Earl of St.*

Jesi (yā'sē), a town in Italy. See *Iesi*.

Jessamine. See *Jasmine*.

Jesso, an island of Japan. See *Yesso*.

Jessulmeer, or **JEYSULMEER.** See *Jaisalmer*.

Jester, or **COURT-FOOL**, a buffoon or person maintained by the noble and wealthy to make sport by jests and merry conceits for them and their friends. The professional jesters usually wore a motley or party-coloured dress, and a cap or cowl of gay colours furnished with bells and asses' ears, or crowned with a cock's comb. In Britain the last jester regularly attached to the royal

household seems to have been Archie Armstrong, the jester of James I. and Charles I.

Jesuit Porcelain, a name given to Japanese porcelain of the 16th century, which the Jesuits had caused to be decorated with Madonnas, images of the saints, and Christian emblems. It is now rare,



Jester.—Antiquarian Club.

JESUITS.

Jesuits, or SOCIETY OF JESUS, the most celebrated of all the Roman Catholic religious orders, founded in the 16th century by Ignatius Loyola, and established by a papal bull in 1540, the founder being the first *general* of the order. The members, in addition to the usual vows of poverty, chastity, and implicit obedience to their superiors, were bound by a fourth, viz. to go whithersoever the pope should send them, as missionaries for the conversion of infidels and heretics, or for the service of the church in any other way. The popes Paul III. and Julius III., seeing what a support they might have in the Jesuits against the Reformation, granted to them privileges such as no body of men, in church or state, had ever before obtained. They were permitted to enjoy all the rights of the mendicant and secular orders; to be exempt from all episcopal and civil jurisdiction and taxes, so that they acknowledged no authority but that of the pope and the superiors of their order; to exercise every priestly function, parochial rights notwithstanding, among all classes of men, even during an interdict; and they could absolve from all sins and ecclesiastical penalties, dispense themselves from the observance of fasts and prohibition of meats, and even from the use of the breviary. Their general was invested with unlimited power over the members, the dispersion of whom throughout society, with the most entire union and subordination, was made the basis of the order. The constitution of the body was drawn up in great part by Loyola himself, but the second general, Laynez, had much to do in directing its early movements.

The order soon approved itself to the pope by its zealous activity, and its success as the most effectual barrier against the growing power of Protestantism. The Jesuits carefully avoided all appearance of spiritual pride, often wore the ordinary garb of the country, and generally dealt with all matters in a spirit of worldly policy and accommodation to circumstances. Their grand object was the establishment of the papal power, not only against Protestantism, but against all the claims of kings and national churches. In 1541 their foreign missions were begun by Francis Xavier in the Portuguese East Indies, and were attended with great success. Other Jesuits went to South America, and laboured successfully in Brazil and Paraguay. In Europe they became the teachers of the higher classes,

and carried out on a grand scale improvements in the current system of instruction. The young nobility were almost exclusively sent to them, and even from Protestant countries. It was in Catholic countries, however, that their strength lay; in England and the Protestant states of the north they were not so successful, their repeated attempts to establish themselves there proving fruitless.

Yet notwithstanding the great favour which they enjoyed at courts and among the people, the non-Jesuit clergy, the older orders of monks, the universities, and the learned men of the age soon began to dread the powerful influence which the society was rapidly acquiring, while their busy intriguing spirit made them the objects of suspicion and jealousy to statesmen, on account of their interference in political affairs. For this reason the parliament and higher clergy of France for twenty years resolutely resisted the attempts of the Jesuits to gain a footing in that country. It was owing chiefly to the favour of the Guises that they at last, in 1562, were legally recognized in France under the name of *Fathers of the College of Clermont*, with a humiliating renunciation of their most important privileges. They appeared in Germany about 1549, and soon secured chairs in the universities of Prague, Ingolstadt, Cologne, Munich, Treves, Augsburg, and other places. They showed remarkable political talent in the thirty years' war; the league of the Catholics could do nothing without them. But while they were thus successful in this part of Europe, in France and the Netherlands the Jansenist controversy injured their position, and the character of the Jesuits received a fatal wound from the pen of Pascal, whose famous Provincial Letters exposed with admirable wit and argument the dangerous element in their doctrines and practices, the accommodating morality which allowed interest and external circumstances to determine the rule of conduct, which counselled evasiveness and mental reservations, and consecrated evil means for a good end.

Towards the middle of the 18th century the general sense of danger from the Jesuits, and of the incompatibility of their privileges with the authority of the state and the rights of others, prompted a movement against them in various countries. In 1759 the efforts of the minister Pombal brought about their expulsion from Portugal, and

the confiscation of their possessions in that country. In France the commercial complications of a Jesuit trading-house at Martinique with some French merchants led to an inquiry which brought to light many abuses. Louis XV. tried to save the society by demanding a reform of its constitution, a demand refused by the general of the order, Lorenzo Ricci, in the famous terms, '*Sint ut sunt, aut non sint*' (Let them be as they are, or cease to be). The result was a decree issued in 1764 for the abolition of the order in all the French possessions. Three years later they were expelled from Spain, and soon after from Naples, Parma, and Malta; and finally in 1773 Pope Clement XIV. was induced to publish his famous bull *Dominus ac Redemptor Noster*, by which the Society of Jesus was totally abolished in all the states of Christendom. They were obliged to quit their houses, lay aside the garb of the order, renounce all intercourse with one another, and either enter some of the other orders or put themselves under the superintendence of the bishops. They received annuities from the revenues of their confiscated estates, except in Portugal, in which country they were prohibited from residing, as also in Spain; while in the States of the Church, in Upper Italy, and in Germany, Hungary, Poland, and even in France they were suffered to remain as private persons. An attempt in 1787 to revive the society under the name of *Vicentines* was unsuccessful; but in 1814 Pius VII. issued a bull (*Sollicitudo omnium Ecclesiarum*) which re-established it in precisely the same form in which it had fallen. In 1815 a college was given them at Modena, and they did not delay to accept the invitations of the kings of Sardinia, Naples, and Spain. Subsequently they found entrance into all European countries. In Italy, since the establishment of the new kingdom in 1861, the Jesuits have no legal existence, but continue, nevertheless, an influential and well-known body. In Britain they have been permitted to open educational institutions, the principal of which are at Stonyhurst, near Preston, in Lancashire; Mount St. Mary's College, near Chesterfield, Derbyshire; Beaumont Lodge, near Windsor; and St. Benno's, at St. Asaph, in North Wales. In Ireland they have also several important institutions, and, within a recent period, in Scotland. They have also colleges in the United States and in Canada. It was under the influence of this

order that the Œcumenical Council of 1870 was held, and they have had a decided influence in shaping the recent policy of the papal authorities. By the law of the 4th of July, 1872, they were expelled from the German Empire, to the erection of which they had shown the utmost hostility. In 1880 they were expelled from their conventual establishments in France, and a considerable number of them came to Britain.

Jesuits' Bark, or PERUVIAN BARK, the bark of a certain species of *Cinchona*, so called because it was first introduced into Europe by the Jesuits. See *Cinchona*.

Jesuits' Nut, a name sometimes given to the fruit of the *Trapa natans*. See *Trapa*.

Jesus, son of Sirach, the author of the apocryphal book called Ecclesiasticus (which see).

Jesus Christ (*Iēsous*, the Greek form of Joshua or Jeshua, contracted from Jehoshua, meaning, help of Jehovah, or saviour; *Christos*, the Greek translation of the Hebrew Messiah, anointed), the founder of the Christian religion; born in Bethlehem according to the received chronology in the year of Rome 754, but in reality some four years earlier, that is, in 4 B.C. He was born of the Virgin Mary, of the tribe of Judah, who was betrothed to Joseph, by occupation a carpenter. Two genealogies of Joseph differing very much after the time of David are given, one by Matthew, chap. i.; the other by Luke, chap. iv. Our information concerning him is derived almost entirely from the accounts of his life written by the four evangelists Matthew, Mark, Luke, and John, and incidental notices in other parts of the New Testament. Before the birth of the Holy Child, Joseph and Mary, then residing in Nazareth, went to Bethlehem to be taxed, and it was there, in a manger, the inn being full, that Jesus was born. On the night of his birth an angel announced the coming of a Saviour to shepherds tending their flocks by night in the field. On the eighth day he was circumcised according to the law of Moses. Soon after his birth he was hailed by the adoration of the Magi or wise men of the East, who were miraculously directed to the house where the young child was, and presented royal gifts. Herod, alarmed at hearing of the birth of one who was to be King of the Jews, determined to destroy all the male children of Bethlehem and its vicinity of the age of less than two years, for the purpose of effecting the death of Jesus. But

Joseph, being miraculously warned of the danger, fled to Egypt with the virgin and her child, and on his return, after the death of Herod, went to reside at Nazareth in Galilee, whence Jesus was often called a Nazarene. We have no further accounts of Jesus till his twelfth year, when his parents took him with them to Jerusalem. Here after being lost for three days he was found in the temple sitting amongst the doctors hearing them and asking them questions. Regarding the following eighteen years of his life the evangelists are silent. He probably during this period followed his occupation as a carpenter. At the age of about thirty he appeared as a public teacher, having been baptized in the Jordan by John, who recognized him as the Messiah. He then retired to the wilderness, where he passed forty days in fasting, meditation, and prayer previous to being tempted of the devil as described by the evangelists. He then began to select his disciples, to teach publicly, and perform miracles. Amongst the notable incidents of his public career are, the changing water into wine at the marriage in Cana of Galilee (his first miracle); the driving of the traders out of the temple during the feast of the passover; the curing by a word a nobleman's son lying ill at Capernaum; his scornful reception as a preacher in the city of Nazareth on account of his humble parentage; the calling of the twelve apostles; the sermon on the mount; the healing of the centurion's servant and the restoration of the widow's son at Nain to life; the healing of the man at the pool of Bethesda; the miraculous feeding of 5000 persons with five loaves and two fishes; the calming of the tempest on the lake of Gennesaret; his healing the Syrophenician woman's daughter of an unclean spirit; the transfiguration on the mountain; the raising of Lazarus at Bethany; the cure of blind Bartimæus at Jericho; the entry with triumph into Jerusalem; the fourth feast of the passover with his disciples, known as the Last Supper; the agony in the garden of Gethsemane; the betrayal and the condemnation before the sanhedrim; the trial before Pilate, and the crucifixion on Golgotha or Mount Calvary. The body of Jesus was taken down from the cross by Joseph of Arimathea, and placed in a tomb about which the Jewish priests set a guard. But on the third day, *i.e.* on the day thence called the Lord's day and made first day of the week, he rose from

the dead, appeared to his disciples and others, and on the fortieth day after his resurrection, while with his disciples on the Mount of Olives, was visibly taken up into heaven. These events of his public life are generally considered to have occupied three years.

Jesus College, Cambridge, an institution founded by Alcock, bishop of Ely, in 1496.

Jesus College, Oxford, was founded by Queen Elizabeth in 1571. Many of the fellowships and scholarships are confined to persons born or educated in Wales. The college is thus distinctively the Welsh one. This was the first college founded on Protestant principles.

Jet, a solid, dry, black, inflammable fossil substance, harder than asphalt, susceptible of a good polish, and glossy in its fracture, which is conchoidal or undulating. In Great Britain it is found chiefly at Whitby in beds of the Upper Lias shale. It is the altered fossilized wood of coniferous trees. It is wrought into buttons and personal ornaments of various kinds.

Jet'sam, or **JETTISON**, goods thrown overboard from a ship in danger. See *Flotsam*.

Jettee', or **JETEE'**, the fibre of *Marsdenia tenacissima*, a small climbing plant of the nat. order Asclepiadaceæ, growing in some elevated regions of N. India. The fibre is fine and silky and of great strength.

Jetty, a kind of pier or artificial projection of stone, brick, wood, or other material, affording a convenient place for landing from and discharging vessels or boats, or serving as a protection from the violence of the waves; or a jetty may be built out from the bank of a stream obliquely to its course, and employed either to direct a current on an obstruction to be removed, as a bed of sand or gravel, or to deflect it from the bank which it tends to undermine or otherwise injure. In this last sense jetties have been successfully used to deepen river mouths or retard the advance of a bar, as at the mouths of the Mississippi, the Maas, the Danube, the Vistula, and other rivers. Many harbours, such as Calais, Ostend, &c., depend on jetties for their existence.

Jeux Floraux (*zheu flō-rō*; Floral Games), a poetic contest and festival annually celebrated in Toulouse, and having its origin in a poetical college, Collège du gai Savoir, founded in 1323 by seven troubadours. Its annual fête is still celebrated, and a volume of the competition pieces is published yearly.

Jevons, WILLIAM STANLEY, an English writer on logic and political economy, born at Liverpool in 1835. He was educated at University College, London; held an appointment in the royal mint in Australia from 1854 to 1859; graduated at London University in 1862; was appointed professor of logic, mental and moral philosophy, and Cobden lecturer on political economy in Owens College, Manchester, afterwards professor of political economy in University College, London, a post which he resigned in 1881. Amongst his works are *Elementary Treatise on Logic* (1870), *Theory of Political Economy* (1871), *Principles of Science* (1874), and many essays and addresses on economic questions. Those entitled the Coal Question, the Value of Gold, Money, and the Mechanism of Exchange, may be specially mentioned. He was drowned while bathing in 1882.

Jew, THE WANDERING, a legendary personage regarding whom there are several traditions. One of the most common is that he was a cobbler in Jerusalem by name Ahasuerus, at whose house Jesus, overcome with the weight of the cross, stopped to rest, but who drove him away with curses. Jesus is said to have replied, 'Truly, I go away and that quickly; but tarry thou till I come.' Since then, driven by fear and remorse, the Jew has wandered, according to the command of the Lord, from place to place, and has never yet been able to find a grave. The legend has been made use of by Shelley, Lewis, Croly, and Mrs. Norton in England, Schubart and Schlegel in Germany, and Sue in France.

Jew-bush, *Pedilanthus tithymaloides*, a plant of the nat. order Euphorbiaceæ. It grows in the West Indies, and is used in decoction as an antisyphilitic, and in cases of suppression of the menses. It is also called *Milk-plant*.

Jewell, JOHN, Bishop of Salisbury, born in 1522, died 1571. He was educated at Oxford, embraced the principles of the Reformation, and contributed greatly both by his work as a college tutor and by his sermons and writings to the progress of Protestantism. On the accession of Mary he at first temporized to avoid persecution, but finally in 1554 escaped to Frankfort. On the accession of Elizabeth in 1558 he returned to England, took part in all the measures for the thorough establishment of Protestantism, and became Bishop of Salisbury in 1560. He is famous for his many

controversial writings, amongst which his *Defence of the Church of England*, or *Apologetica Ecclesiæ Anglicanæ* (1562), written in elegant Latin, is notable.

Jew-fish, the name given to two species of large fishes well known in American waters. The one known also as the guasa or black grouper (*Promicrops itaira*) sometimes reaches the weight of seven hundred pounds; the other (*Stereolepis gigas*) inhabits particularly the Californian coast, often weighs five hundred pounds, and has flesh of excellent quality.

Jewish Era. See *Epoch* and *Calendar*.

Jews, a Semitic race of people also known as Hebrews and Israelites, and whose early history is identified with that of Palestine or the Holy Land. The main authority for the early history of this people is the Old Testament. But the chronology is obscure and difficult to harmonize. Jewish history may be considered as beginning with the emigration of the patriarch Abraham, ancestor of the race, from Ur of the Chaldees, probably about 2000 B.C. Abraham removed to the south-east of Palestine, where we find his descendants flourishing when they were led to emigrate to Goshen, in Egypt. The interval is filled up with the history of the patriarchs, Abraham, Isaac, and Jacob (which see). Joseph, a son of Jacob, had become viceroy of Egypt, and his father and brothers were received with high favour by the Pharaoh who then ruled in this country. But in course of time the condition of the Israelites, under the rule of the Pharaohs, changed for the worse. They were treated as bondmen, and forced labour exacted of them in an unreasonable degree. According to some authorities the Pharaoh who began to oppress the Israelites was Ramses II., and their deliverance took place under his son. (See *Egypt*.) It was perhaps about 1320 B.C., others say 1491 B.C., that a deliverer in the person of Moses led the Israelites out of the land of bondage, where they resided for some 400 years. By this time they formed a community of several millions, divided into twelve tribes, named respectively after Reuben, Simeon, Judah, Issachar, Zebulun, Benjamin, Dan, Naphtali, Gad and Asher, sons of Jacob, and Manasseh and Ephraim, sons of Joseph. Under his leadership they went forth into the wilderness; through him they received the law of the ten commandments on Mount Sinai, and the whole polity by which they were to be governed as a

people. A ceremonial of sacrifice was instituted, and Aaron, the elder brother of Moses, and his sons consecrated as a hereditary priesthood, the priestly functions thus falling to the tribe of Levi. The nation was established as a theocracy, and this principle, however often forgotten in times of repose, continued henceforward to be the inspiring idea of national unity throughout the frequent crises of Jewish history. The emigrants first settled at Kadesh on the southern borders of Palestine, where they remained for many years, this being the period spoken of in the Scriptures as the forty years' wandering in the wilderness. They now marched northward to find new settlements in Palestine, which they had to wrest by force from the Canaanites. Moses died before entering the promised land, and was succeeded as leader by Joshua, under whom the Israelites advanced to the conquest of the territories of the Canaanites west of Jordan. The former inhabitants, however, were not entirely subjugated, but retained possession of a number of cities, and the twelve tribes settled in districts which were more or less cut off from one another, and which formed an exceedingly loose union of small states under tribal chiefs, at times hard pressed by neighbouring peoples. It was only long after, and by a gradual process of absorption, that the Canaanite territories and their inhabitants became amalgamated with the Israelites.

After the death of Joshua, about 1220, or according to another chronology 1427 B.C., a succession of judges or military leaders arose. Among the more remarkable of these judges were Barak, Deborah the prophetess, Gideon, Jephthah, Samson, and Samuel. About 1070 the Philistines, who inhabited the coast and the low-lying plains west of the mountains of Judah, had defeated the Israelites and subjugated part of the country when Samuel, the 'last judge in Israel,' was inspired to declare to Saul, a Benjamite, his destiny to become king, and anointed him as such. Saul soon proved his fitness for the post by his successful leadership of the Israelites, and he continued to organize the forces of Israel, and to fight with varying success against their enemies till his disastrous defeat and death at Mount Gilboa, after which the power of the Philistines again predominated on the west side of Jordan. On the other side of the river the military skill of Abner still preserved a kingdom for Saul's son, Ishbosheth, and

gradually reasserted with some success his authority in Ephraim and Benjamin. But in Judah David, a native of Bethlehem, a warrior whom Saul's jealousy had driven into exile and alliance with the Philistines, and who had previously been anointed king in place of Saul, established a separate principality, the capital of which was at Hebron. For seven years a hot war was waged between the two Hebrew states, and ended only with the murder of Abner and Ishbosheth, when all the tribes acknowledged David as king. David now transferred his residence from Hebron to Jebus, a fortified city which he wrested from the Canaanites, and called the city of David, afterwards Jerusalem. He assailed and subdued the Philistines, Moabites, Edomites, Ammonites, and other surrounding nations, till all the country from the N.E. end of the Red Sea to Damascus acknowledged his authority. To this prosperous kingdom succeeded his son Solomon (B.C. 993, or by the long chronology 1015). His reign, owing to the warlike reputation which the nation had acquired under David, was entirely peaceful. He had no military tendencies, but he took great pains to arrange the administration of the kingdom in an orderly way, and his wisdom as a ruler and judge became proverbial. His alliances with Tyre and Egypt enabled him to carry on an extensive and lucrative commerce. He built the celebrated temple in Jerusalem, and extended and improved the city. His harem contained 700 wives that were princesses, besides 300 concubines. But with these, and with the extended commerce of the kingdom, it was inevitable that foreign elements should be introduced into the Jewish national life. Thus Solomon erected altars for the deities and the worship of the Moabites, the Ammonites, the Sidonians, and other nations; and the severe simplicity of old Hebrew manners gave place to luxury and craft.

The splendour of Solomon's reign had entailed heavy exactions upon his people. When Rehoboam, Solomon's son, succeeded, they came with Jeroboam at their head and demanded that he should make their yoke lighter. Rehoboam answered scornfully, whereupon ten tribes revolted and set up Jeroboam as king of a separate kingdom of Israel, with its capital first at Sichem, later at Samaria. Judah, along with a part of Benjamin and the tribe of the Levites, remained loyal to the dynasty of David. After an unsuccessful attempt to reconquer

JEWS.

the kingdom of Israel, Rehoboam was forced by an invasion of Shishak of Egypt to give up the hope of uniting the two kingdoms. In the next generation things had changed so much that Asa, king of Judah, was obliged to seek the help of Benhadad of Syria against King Baasha of Israel. Baasha was succeeded by Elah, Elah by Zimri, and Zimri by Omri, under whom the kingdom of Israel seems to have grown powerful. Omri established the capital of the kingdom at Samaria (about 906 B.C.), and subjugated the Moabites. The son of Omri, Ahab, married Jezebel, princess of Tyre, an event which led to the extension of Phœnician idolatry in Israel. As Solomon had done before, Ahab built a temple for the Syrian Baal in his capital. In his reign and subsequently the great prophets Elijah and Elisha played an important part. Ahab was slain at Ramoth-Gilead in battle against the Syrians. He was succeeded by Ahaziah (853-851), and Joram (851-843). The latter was slain by Jehu, a captain of the army, who had been anointed king by command of Elisha. Jehu (843-815) now made a clearance in Samaria of Syrian idolatries, destroying the temple of Baal and putting the priests to death. Under Jeroboam II., fourth in the line of Jehu, the kingdom reached a high point of prosperity (790-749). After Jeroboam's death there was a quick succession of kings, Zachariah, Shallum, Menahem, Pekahiah, Pekah; none of any significance. Under Pekah the kingdom of Israel became tributary to the Assyrians. (See *Assyria*.) Hosea, Pekah's successor, made an ineffectual attempt to free the country from the Assyrian yoke; but finally, in 722, Samaria was captured by the Assyrian king, Sargon, the kingdom of Israel virtually destroyed, and the chief inhabitants carried away and settled in Assyria and Media.

Generally while the kingdom of Israel had been flourishing, that of Judah had stood in the background. Rehoboam was succeeded by Abijam, Asa, Jehoshaphat, the last a powerful and fortunate king. In the hope of putting an end to the war with the kingdom of Israel, Jehoshaphat married his son Jehoram (848-844) to Athaliah, the daughter of Ahab of Israel. After the murder of her son Ahaziah by Jehu, Athaliah seized the supreme power in Jerusalem, and put to death her own grandchildren in order to destroy the line of David, Joash alone being miraculously rescued. Atha-

liah was overthrown and put to death and the young Joash raised to the throne (837-797). His successors were: Amaziah (797-792), Uzziah (792-740), Jotham, Ahaz, and Hezekiah (727-699). Under Ahaz and Hezekiah Isaiah delivered his sublime prophecies. Hezekiah was one of the greatest reforming kings; his influence extended widely over the kingdom of Israel, now in extreme decline. He was miraculously delivered from an invasion of Sennacherib, king of Assyria, by the destruction of the Assyrian army. (See *Assyria*.) Josiah (641-610) was the last of the pious kings of Judah. He was killed in battle against Necho, king of Egypt. After him there was an uninterrupted succession of weak and incapable monarchs, till under Zedekiah (599-588) the capture of Jerusalem by Nebuchadnezzar, B.C. 588, put an end to the monarchy, Jerusalem being destroyed and many of the people being carried captive to Babylon. The prophet Jeremiah flourished from the reign of Josiah to the captivity.

In 538 Babylon was taken by Cyrus, king of Persia, who restored the Jews and appointed Zerubbabel governor of Judæa, as a Persian province. The great majority of the Jews remained in Persia, however, only about 42,000 returned, and settled chiefly in the vicinity of Jerusalem. About 458 a second return of exiles was led from Persia by Ezra. Along with Nehemiah, who had been appointed Persian governor of Judæa, Ezra promulgated the new law-book, practically identical with the Pentateuch. From the time of Nehemiah to the fall of the Persian empire the Jews continued to live in peace as Persian subjects, but enjoying their own institutions. When Alexander the Great overthrew the Persian empire the Jews readily submitted on being promised the free exercise of their religion (B.C. 332). After the division of Alexander's empire Palestine was long a possession of the Ptolemies of Egypt, under whom it enjoyed a period of tranquillity. It was under the patronage of Ptolemy (II.) Philadelphus (reigned B.C. 285-247), according to tradition, that the Septuagint or Greek version of the Old Testament Scriptures was made. After the death of Ptolemy Philopator Antiochus the Great of Syria became master of Palestine (B.C. 198). An Egyptian and a Syrian party now arose among the Jews, and gave occasion to civil dissensions, which led Antiochus IV. (Epiphanes) to invade Judæa (B.C. 170), when he

JEWS.

took Jerusalem by storm and slaughtered the inhabitants without distinction of age or sex, and endeavoured to compel the Jews to give up their religion. At length under the leadership of the Maccabees or Asmonæan family resistance arose, and after a struggle of nearly fourteen years was successful. In 135 B.C. John Hyrcanus, son of Simon, a brother of Judas Maccabæus, completed the independence of Judæa, and extended his dominion over the ancient limits of the Holy Land. During his reign the rival sects of the Pharisees and Sadducees became established. Aristobulus I., the son of Hyrcanus, assumed the title of king, which was held by his successors. In B.C. 63 Pompey, called in to help the Pharisees, took Jerusalem, and made the Jews tributary to the Romans. Latterly Herod the Great, who entirely threw off Jewish manners and cultivated the favour of the Romans, was recognized as King of Judæa by the Roman senate. It was in B.C. 4, the last year of his reign, that the birth of Christ took place at Bethlehem. In 6 A.D. Judæa and Samaria became a Roman province under a procurator, who had his seat at Cæsarea, and was subordinate to the prefect of Syria. Pontius Pilate, under whom our Lord's public ministry and crucifixion occurred, was made procurator A.D. 26. For a time the country was again ruled by a king, Herod Agrippa, A.D. 41-44. He persecuted the Christians and put the Apostle James to death. In A.D. 65 a party of the Jews revolted from the Roman yoke and roused the whole of Palestine to insurrection. Vespasian was sent by Nero to suppress it, but before the war was finished was called to the empire and left his son Titus to conclude it. The result was the capture and destruction of Jerusalem, A.D. 70, an event that deprived the Jews of the centre of unity to which their national life had hitherto clung. After an insurrection headed by Bar-Cochba, 132-135, Hadrian razed the remains of Jerusalem left by Titus to the ground, and erected in their place a Gentile city, with the title *Ælia Capitolina*. Jews were forbidden to enter this city on pain of death, and the name of Jerusalem was not revived till the time of Constantine. See *Jerusalem*.

Henceforth the Jews became more and more a scattered people, without a country they could call their own. Under the Roman emperors their treatment varied. Under the Emperor Julian they ventured

to make preparations for a new temple in Jerusalem. Although this attempt failed, they derived great advantages from their sanhedrim, revived at Tiberias, and their patriarchates (presidencies of the sanhedrim), which were established—one at Tiberias for the Western Jews (429); the other for the Jews beyond the Euphrates, latterly at Bagdad. These two patriarchates became points of union, and flourishing Jewish academies arose in the East to serve as seminaries for their learned rabbins. One of the works of these scholars was the collection of the traditionary expositions of the Old Testament, and additions to it, which was completed A.D. 500, and received, under the name of the *Talmud*, as a rule of faith by the scattered communities of Jews. (See *Talmud*.) In time the scattered Jews made themselves masters of the commerce of the Old World, and, as money-lenders and brokers, were often of great importance to princes and nobles. Even during the dreadful persecutions which they underwent from the cruelty of the Christians they still continued prosperous in Christian countries. They lived more happily, however, among the Mohammedans, although they were distinguished by dishonourable badges and oppressed by heavy taxes; and during the Moorish supremacy in Spain their prosperity was great and their learning flourishing. In the cities of France, Germany, and Italy, after the 11th century, particular streets and inclosed places were assigned to them as a sort of outcasts, in consequence of which, in the persecutions during the Crusades, thousands often fell victims at once to the popular fury. They were generally pronounced incapable of civil rights and public offices. In Spain and Portugal during the 15th century they yielded to force, and multitudes suffered themselves to be baptized, many were put to death by the Inquisition, and at last they were banished from the peninsula. It was only in the end of the last century that the Jews began to be put on a level with other citizens, France leading the way after the Revolution, and Prussia following (1811). After repeated unsuccessful attempts to procure their admission into the British parliament, the object was at last effected in 1858. The most remarkable circumstances connected with the modern Jews is the tenacity with which they cling to their ancient religion, and the purity in which on the whole they

have retained their racial characteristics in the midst of alien peoples. In modern times they have produced some of the greatest names in letters and arts, as Spinoza, Moses Mendelssohn, Heinrich Heine, Meyerbeer, &c. The total number of Jews throughout the world is estimated at 8,000,000, the greater number being in Russia and Austria-Hungary. For the national language and literature of the Jews see *Hebrews*.

Jews'-harp, a toy musical instrument held between the teeth, which gives a sound by the motion of a tongue of steel, which, being struck by the hand, plays against the breath. Called also *Jews' Trump*, or simply *Trump*.

Jeypore. See *Jaipur*.

Jez'reel, a city of Palestine, chosen by Ahab, king of Israel, as his chief residence.

Jezreelites, a religious sect founded by James Jershom Jezreel, his real name being James White, who died in 1885. The revelations which he pretended to have received are contained in 'The Flying Roll,' which represent the Jezreelites as being animated by the just spirits who withstood Satan at his rebellion in heaven, and who shall enjoy a greater state of bliss than Gentile Christians, who have the spirits which, though not rebellious, did not actively withstand Satan. The head-quarters of the sect are at Gillingham, Kent.

Jháláwár, Indian native state in Rájputána; area, 2694 sq. miles; pop. 340,488. Capital, Jhalra Pátan, or Pátan; pop. 11,469.

Jhang, town of Hindustan, in the Punjab, about 3 miles from the Chenab. Pop. (with adjoining Maghiana), 21,629.—Jhang district has an area of 5702 sq. miles; pop. 395,296.

Jhansi (jhān'sē), a fortified town in Hindustan, in Gwalior state, Central India Agency; pleasantly situated amid tanks and groves of fine timber trees. Within the town stands the fort on a rock. Pop. 1891, 53,779.

Jhelum (jhā'lam), **JHILAM** (jhē'lam) (anciently *Hydaspes*), a river of India, the most westerly of the five great rivers that intersect the Punjab. It rises in Cashmere, flows south, forming the boundary between Cashmere and the Punjab, then south-west through the Punjab, and finally falls into the Chenab. Its whole course is about 450 miles, and it is navigable for the flat-bottomed boats of the country from its junction with the Chenab up nearly to its emergence

from the mountains.—There is a town of same name on the right bank of the river, with military cantonments. Pop. 21,107.

Jib, a triangular fore-and-aft sail extended on a stay stretching from a bowsprit or jib-boom to a mast, the *jib-boom* being a continuation of the bowsprit by a spar run out from the extremity of it.

Jiddah, or **JEDDAH**, one of the chief trading ports of Arabia, on the Red Sea, 60 miles west of Mecca, of which it is the port. It has a considerable trade, and thousands of pilgrims arrive here annually on the way to Mecca. Pop. about 18,000.

Jig, a light quick tune or air in $\frac{3}{4}$, $\frac{3}{8}$, $\frac{6}{4}$, $\frac{6}{8}$, $\frac{9}{4}$, $\frac{9}{8}$, or $\frac{12}{8}$ time, to be found in the sonatas or suites of Corelli, Handel, and other composers till towards the middle of the 18th century. The Irish jig, played to a dance also called a jig, is a lively tune of two or three sections written in $\frac{6}{8}$ time.

Jimena (hi-mā'ná) **de la Frontera**, a town of Spain, in Andalusia, 46 miles E. of Cadiz. Pop. 8485.

Jinn, **JINNEE** being the singular, in Mohammedan mythology, a race of genii, angels, or demons, fabled to have been created several thousand years before Adam. They are not immortal; they are to survive mankind, but to die before the general resurrection. Some are good and obedient to the will of God; others are disobedient and malignant. They can assume the shape of the lower animals, and are visible or invisible as they please. Their chief residence is the mountain Kâf in Arabia.

Jit'omir, a town of Russia, capital of the government of Volhynia, on the left bank of the Teterew, 80 miles w. of Kiev. Pop. 55,875.

Joachimsthal (yo'a-hims-täl), a town of Bohemia, in a valley of the Erzgebirge, near the frontiers of Saxony, 70 miles w.n.w. Prague. It depends chiefly on its valuable lead and silver mines. *Thaler* pieces derived their name from being first coined here. Pop. 6628.

Joan, the female pope, according to a story long believed, but now acknowledged to be a fiction, was said to have been a native of Mainz, who, falling in love with an Englishman at Fulda, travelled with him in man's attire, studied at Athens, and visited Rome. Under the name of Johannes Anglicus, she rose by her talents from the station of a notary till she was elected to the papal chair, under the name of John VIII. (854 to 856, between Leo IV. and Benedict

III.). She governed well, but having become pregnant she was delivered in a solemn procession, and died on the spot.

Joan'nina. See *Janina*.

Joan of Arc (*Jeanne d'Arc*—properly *Darc*), the Maid of Orleans, a heroine in French and English history, was born in the village of Domrémy, Basse Lorraine, now department of the Vosges, in 1409 (some say 1412). While she was still a girl she began to be deeply affected by the woes of her country, much of which was conquered by the English, leaving only a small portion to the French king, Charles VII. In 1427 Orleans was being besieged by the English, and its fall would have ruined the cause of Charles. At this time Joan, who had been noted for her solitary meditations and pious enthusiasm, began, as she declared, to see visions and hear angelic voices, which ultimately called upon her to take up arms for Charles, to raise the siege of Orleans, and conduct Charles to Rheims to be crowned. At first she was regarded as insane, but eventually she found her way to the king and his councillors, and having persuaded them of her sincerity, received permission to hasten with Dunois to the deliverance of Orleans. In a male dress, fully armed, she bore the sword and the sacred banner, as the signal of victory, at the head of the army. The first enterprise was successful. With 10,000 men she marched from Blois, and on the 29th April, 1429, entered Orleans with supplies. By bold sallies, to which she animated the besieged, the English were forced from their intrenchments, and Suffolk abandoned the siege (May 8, 1429). Other successes followed; Charles entered Rheims in triumph; and at the anointing and coronation of the king, July 17, Joan stood at his side. She was wounded in the attack on Paris, where Bedford repulsed the French troops, but continued to take part in the war till May 25, 1430, when she was taken prisoner by the Burgundians, and sold to the English. She was taken to Rouen, and after a long trial, accompanied with many shameful circumstances, condemned to death by the church as a sorceress. On submitting to the church, however, and declaring her revelations to be the work of Satan, her punishment was commuted to perpetual imprisonment. But pretexts were soon found to treat her as a relapsed criminal, and as such she was burned at Rouen, May 30, 1431, and her ashes were thrown into the Seine. She died with undaunted forti-

tude. Five years after, a court specially constituted by Pope Calixtus III. to examine the charges against the Maid of Orleans, pronounced her innocent. Voltaire, in a notorious burlesque, Southey, Schiller, and others have made her the subject of their verse. Schiller's drama still remains the worthiest monument of her fame.

Job, the hero of an ancient Hebrew poem, which forms one of the books of the Old Testament. Job, an upright man, with a family of seven sons and three daughters, with large herds and numerous servants, is suddenly, with the permission of Jehovah and by the agency of Satan, deprived of his possessions and his children, and smitten with a sore disease, yet submits patiently to the divine will. Three friends come to console him, and a large part of the poem is occupied with the speeches of his friends, who attribute his misfortunes to wickedness and hypocrisy, and his replies to them, until near the close, when God himself is introduced answering Job out of a whirlwind. In the sequel Job is delivered from his calamities, lives 140 years, becomes richer than he had been before, and begets seven sons and three daughters. The design of the book seems to be to enlarge men's views of the providence of God. It was probably written between the 7th and the 5th centuries B.C., and is certainly not earlier than the time of David. The basis of the story was probably traditional.

Job's Tears (*Coix lachryma*), an annual grass about a foot in height, a native of the East Indies and Japan, sometimes grown in hot-houses. The hard, round, shining seeds, from whose fanciful resemblance to tears it derives its name, are used both for ornament and as food.

Jocasta. See *Œdipus*.

Jockey Club. See *Horse-racing*.

Jodhpur (jöd-pör'), or **MARWAR**, a town of Hindustan, capital of the state of Jodhpur. It stands in a hollow inclosed by rocky eminences, on the highest of which is a fort, containing the Maharajah's palace, and commanding the city. The city has many handsome buildings, and is surrounded by a strong wall with seventy gates. Pop. estimated about 60,000.—The state of Jodhpur is the largest in Rajputána, having an area of 37,000 sq. miles; it is well watered by the Luni and its affluents; and though arid in many parts, raises in others good crops of wheat, barley, millet, &c. Pop. 1891, 2,521,727.

Joel, one of the twelve minor prophets. Nothing is known of his life. He is generally supposed to have been contemporaneous with Hosea and Amos. The immediate occasion of his prophecy was a protracted drought and a visitation of locusts and other destructive vermin, but it expands in a style of high sublimity into predictions of future prosperity when the divine judgments should have purified the nation. Joel is quoted by St. Peter, Acts ii. 16–21.

Joe Miller, the name attached to a well-known collection of jests, first published in 1739. The name belonged to a comic actor, who had then a great reputation as a wit and humorist. The real compiler, however, was a John Mottley, an obscure author who died in 1750.

Johan'nesburg, a town in the Transvaal, recognized as the central point of the gold-fields of the district stretching south-west from Pretoria to Potchefstroom, and known as the Witwatersrand. The streets and squares of the town are well laid out, and the buildings solid and substantial. The white population is mainly English, and is estimated at 12,000.

Johan'nisberg, a village of Prussia, on the right bank of the Rhine, about 12 miles west by south of Mainz. Near it on a hill stands the castle of Johannisberg, which in 1814 was given to Prince Metternich by the allies. The vineyards of the estate produce Johannisberg, the finest of the Rhenish wines.

John, one of the apostles, often distinguished as *St. John the Evangelist*, the reputed author of the fourth Gospel, three epistles, and the Revelation, was the son of Zebedee and Salome, and the brother of James. Previous to his call by Jesus he was a fisherman on the Sea of Galilee, together with his father, his brother, and Simon Peter and Andrew, who were his partners. John, together with Peter and James, was admitted to a more confidential intercourse with Jesus than the other apostles, and he is repeatedly spoken of as 'the disciple whom Jesus loved.' His Gospel was written later than any of the others—according to some critics to refute particular heresies, and contains fuller details of our Lord's conversation and discourses than the other Gospels, and is also more doctrinal in character. Of the three epistles the first has much resemblance to the Gospel; but the other two were considered doubtful even by the early fathers. As to the Revelation, see *Revelation*. After

the death of Jesus John continued at Jerusalem, and we afterwards find him at Samaria (Acts iii. 14–25). Tradition handed down by the fathers makes him die at Ephesus, and if he wrote the Revelation he must have been banished to Patmos. The time of his death is unknown.

John, called the *Baptist*, the forerunner of Christ, was born six months before Jesus (their mothers were cousins), of a Levitical family in Judæa. He lived an austere life, given up to solitary meditations, till A.D. 26, when he began to preach in the deserts of Judæa, announcing that the kingdom of heaven was at hand, and proclaiming himself the harbinger of the Messiah. He baptized many converts, and testified to the higher mission of Jesus at the time of his baptism in the Jordan. To gratify a vindictive woman Herod Antipas, tetrarch of Galilee, caused him to be beheaded in prison. But for long afterwards his disciples continued to form a separate body, and are said to have established the still existing sect of Sabians or St. John Christians in Persia, distinguished for their veneration of John the Baptist.

John, the name of twenty-three popes, among whom are the following:—**JOHN I.** (*St. John*), pope in 523–526. Theodoric sent him to Constantinople, to induce the Emperor Justin to adopt milder measures towards the Arians, and on his returning without success Theodoric threw him into prison, where he died.—**JOHN XII.** succeeded Pope Agapetus II. in 956, when only eighteen years old. He was the first pope who changed his name on his accession to the papal dignity. His life was so licentious and disorderly that the Emperor Otho had him deposed by a council in 963, and Leo VIII. elected in his stead. But on Otho's departure John returned to the city with a strong body of followers and drove out Leo. He died in 964.—**JOHN XXII.**, a native of Cahors, was elected pope at Lyons in 1316, after the death of Clement V. He resided at Avignon, and took an active part in the disputes of the emperors Louis of Bavaria and Frederick of Austria. He died in 1334.—**JOHN XXIII.** (*Balthasar Cossa*), born in Naples, was a pirate in his youth, afterwards studied at Bologna, and was elected pope in 1410, by the Council of Pisa, after the death of Alexander V., on condition that, if Gregory XII. and Benedict XIII. would resign, he would also retire to end the schism. He summoned the

JOHN.

Council of Constance, demanded by the Emperor Sigismund, in 1415, and was deposed by this council as guilty of a long list of heinous crimes. For some years he remained in custody, but was ultimately pardoned by Pope Martin V., and made a cardinal. He died in 1419.

John, King of England, born in 1166, was the youngest son of Henry II., by Eleanor of Guienne. Being left without any particular provision he got the name of *Sans Terre* or Lackland; but his brother, Richard I., on his accession conferred large possessions on him. He obtained the crown on the death of Richard in 1199, although the French provinces of Anjou, Touraine, and Maine declared for his nephew, Arthur of Brittany, who was lineally the rightful heir, then with the King of France. A war ensued, in which John recovered the revolted provinces and received homage from Arthur. In 1201 some disturbances again broke out in France, and the young Arthur, who had joined the malcontents, was captured and confined in the castle of Falaise, and afterwards in that of Rouen, and never heard of more. John was universally suspected of his nephew's death, and the states of Brittany summoned him before his liege lord Philip to answer the charge of murder, and in the war which followed, John lost Normandy, Anjou, Maine, and Touraine. In 1205 his great quarrel with the pope began regarding the election to the see of Canterbury, to which the pope had nominated Stephen Langton. The result was that Innocent III. laid the whole kingdom under an interdict, and in 1211 issued a bull deposing John. Philip of France was commissioned to execute the decree, and was already preparing an expedition when John made abject submission to the pope, even agreeing to hold his kingdom as a vassal of the pope (1213). John's arbitrary proceedings led to a rising of his nobles, and he was compelled to sign the Magna Charta or Great Charter, June 15, 1215. But John did not mean to keep the agreement, and obtaining a bull from the pope annulling the charter, he raised an army of mercenaries and commenced war. The barons, in despair, offered the crown of England to the dauphin Louis, who accordingly landed at Sandwich 30th May, 1216, and was received as lawful sovereign. The issue was still doubtful when John was taken ill and died at Newark, October, 1216, in the forty-ninth year of his age.

John II., King of France (1319-64), sur-

named the *Good*, was a monarch distinguished alike for his incapacity and his misfortunes. In 1356 he was defeated and taken prisoner by the Black Prince at the battle of Poitiers, and was detained at Bordeaux and at London till released at a heavy expense to his country by the Peace of Brétigny in 1360; but on learning that his son, the duke of Anjou, who had been left as a hostage in England, had effected his escape, he returned to London, where he died in 1364.

John III. (*Sobieski*), King of Poland, son of Mark Sobieski, a Polish captain, was born at Olesko, in Galicia, in 1624, served in the French army, returned to Poland to repel the Russians in 1648, and greatly distinguished himself in several campaigns against Cossacks, Tartars, and Turks, especially by his defeat of the last in the great battle of Choczim in 1673. The year after, on the death of Michael Corybut, he was chosen king. His most celebrated achievement was the relief of Vienna, besieged by a great army of Turks, whom he decisively defeated 12th Sept. 1683. His last years were disturbed by the intrigues of his own family and the anarchy of the country, which he was unable to control, and in which he foresaw its approaching downfall. He died 17th June, 1696.

John, KNIGHTS OF ST., or KNIGHTS HOSPITALLERS of St. John, afterwards called *Knights of Rhodes*, and finally *Knights of Malta*, were a celebrated military religious order, originating in a monastery founded at Jerusalem in 1048 by some merchants from Amalfi. The monastery was dedicated to St. John the Baptist, and the monks, who were called Brothers of St. John or Hospitaliers, had the duty of caring

for the poor and sick, and in general of assisting pilgrims. In 1118 the order was regularly instituted as a military order, with the duty, in addition to their vows of chastity, obedience, and poverty, of defending



Knight of St. John.

the church against infidels. The brethren were divided into three classes, knights, chaplains, and serving brothers, these last having specially the duties of looking after the sick, and accompanying pilgrims. In 1291 the order was driven from Palestine by the conquests of the Saracens, and after holding Cyprus for a time they occupied Rhodes in 1309, from which they were ultimately driven by Sultan Soliman II. in 1522. After that the knights retired to Candia and other places, but finally to Malta, which Charles V. granted them in 1530. Here they continued to be a bulwark of Western Europe against the Turkish navies till modern times. The chief of this order, which had great possessions in almost every part of Europe, was called *Grand-master of the Holy Hospital of St. John of Jerusalem*, and *Guardian of the Army of Jesus Christ*. He was chosen by vote, and lived at Valetta, in the island of Malta. The Knights of St. John observed the rules of the order of St. Augustine. The Protestants, however, were not bound to celibacy. Every member was required to be of good family. The duty of each knight used to be to take the field at least three times against the infidels or the pirates of Barbary. In peace they wore a long black mantle and a gold cross of eight points, enamelled white; in war they wore a red jacket or tabard, charged with a white cross. In 1798 Malta was unexpectedly attacked and taken by Bonaparte, and about the same time the extensive properties belonging to the order in various countries were confiscated. This may be considered the end of the order as a vital institution, although shortly after the capture of Malta, Paul I., who had been chosen grand-master, took the order under his protection, and it still exists nominally at least. After the death of Paul the nomination of the head of the order was vested in the pope.

John, St., Canada. See *Saint John*.

John Bull, a name first used by Dr. Arbuthnot, and since popularized as a typical name suggesting a humorous or burlesque representation of the English character. He is represented as a bluff, jolly, bull-headed farmer.

John Chrysostom. See *Chrysostom*.

John Dory. See *Dory*.

John of Austria, commonly called DON JOHN OF AUSTRIA, the natural son of the emperor Charles V., was born at Ratisbon in 1545. In 1570 he conducted a campaign

against the recalcitrant Moors of Granada with great vigour and relentlessness, and in the following year he commanded the allied fleet which won the great naval battle of Lepanto over the Turks (7th Oct. 1571). In 1576 he was appointed governor of the Netherlands, and had just won along with the Prince of Parma the victory of Gemblours (1578) over William the Silent, when he died, not without suspicion of having been poisoned by his jealous half-brother, Philip II.

John of Gaunt, a corruption of *Ghent*, where he was born in 1339, was fourth son of Edward III. and his queen Philippa, daughter of the Earl of Hainaut. He was created Duke of Lancaster in 1362; served in the French wars, and became governor of Guienne. He assumed in right of his wife the title of King of Castile, invaded the kingdom to assert his claims, but subsequently relinquished them in favour of Prince Henry of Castile, who had become his son-in-law. His eldest son Bolingbroke became king of England as Henry IV. He died 3d February, 1399.

John of Leyden. See *Anabaptists*.

John o' Groat's House (popularly *Johnny Groat's House*), a house formerly situated about 1½ mile west of Duncansby Head, and forming about the most northern extremity of the mainland of Great Britain. According to legend it was built in octagonal form, with eight doors, and contained an eight-sided table, to prevent disputes on precedence in the Groat family.

John's, EVE OF SAINT, a popular celebration of remote antiquity, held on the vigil or eve of the feast of the nativity of John the Baptist, 24th June (Midsummer Day). On the eve of the feast it was the custom in former times to kindle fires (called St. John's fires) upon hills in celebration of the summer solstice, and various superstitions were long practised on this occasion. The custom still lingers in some parts of Europe.

John's, St. See *Saint John's*.

John's, St., Antigua. See *Antigua*.

John Scotus. See *Erigena*.

Johns Hopkins University, one of the foremost universities of the United States, in Baltimore, Maryland, endowed by Johns Hopkins, a merchant of Baltimore, with more than 3,000,000 dols., and opened in 1876. Besides the library there are well-equipped laboratories for chemistry, biology, &c. There is an extensive teaching staff,

JOHNSON.

and instruction is given to two grades of students, graduates and undergraduates. The former are such as have taken a degree here (that of B.A.) or elsewhere, and wish to carry their studies further, this university giving special attention to advanced studies of various kinds, as well as to original research. A number of periodicals are issued in connection with the university. There are, besides numerous scholarships, about twenty fellowships, each of the value of 500 dollars annually. A hospital, also endowed by Johns Hopkins, is connected with this institution.

Johnson, ANDREW, 17th president of the U. States, born in N. Carolina 1808, died 1875. He was self-educated; entered Congress as a Democrat in 1843, and the Senate in 1857. On Lincoln's election he became vice-president, and thus became president upon the assassination of Lincoln in April, 1865. During his term of office he was in constant conflict with the Senate, and was impeached by the House of Representatives of high crimes and misdemeanours (Feb. 1868), the trial ending in a technical acquittal. A general amnesty to the rebels was his last presidential act.

Johnson, DR. SAMUEL, eminent English author, son of a bookseller, was born at Lichfield 1709, died at London 1784. He received his early education partly at the free school of Lichfield, and partly at Stourbridge, in Worcestershire. In 1728 he entered Pembroke College, Oxford, but was obliged by poverty to retire after three years without taking a degree. He became successively an usher in Leicestershire, a bookseller's drudge in Birmingham, and the head of a school established with some money he acquired by marrying, in 1736, Mrs. Porter, the widow of a mercer, considerably older than himself, but to whom he was sincerely attached. The school speedily failed; and in 1737, removing to London, Johnson entered on his long course of literary toil. His reputation rose very slowly; the greater part of his time was wasted for many years on desultory and occasional efforts. A large proportion of his writings appeared in the *Gentleman's Magazine*, or as pamphlets; and most of these are quite forgotten. His two poetical satires, *London* (1738) and *The Vanity of Human Wishes* (1749), are striking specimens of reflection and diction, but neither they nor his tragedy of *Irene* entitle him to be considered as a great poet. *Rasselas*

(1759), written in a week to pay for his mother's funeral, is one of the most interesting and characteristic of his works. His two sets of periodical essays, *The Rambler* (1750-52) and *The Idler* (1758-60), were



Samuel Johnson.

at first coldly received, but on being collected and reprinted they became very popular. For eight years from 1747 Johnson's attention was chiefly engaged by his *Dictionary of the English Language*, a work which appeared in 1755, and is highly honourable to the author in the circumstances in which it was produced, but is of little real philological value. The dictionary, though it raised his fame, added little to his worldly means; and Johnson lived in poverty till 1762, when he obtained, through Lord Bute, a pension of £300 a year. He was thenceforth in easy circumstances, and could enjoy without restraint the society of Burke, Reynolds, Gibbon, Garrick, Goldsmith, and others in the famous club which became a formidable power in the world of letters. In 1763 the first interview with his now equally famous biographer, James Boswell, took place. In 1765 began his intimacy with the family of Mr. Thrale, the great brewer, and in the same year appeared his long-promised edition of *Shakspeare*. In 1773 Johnson made a tour to the Hebrides in company with his friend Boswell, of which he gives a highly instructive account in his *Journey to the Western Isles of Scotland*. In 1775 he received the diploma of D.C.L. from the University of Oxford, and soon after visited France in company with the Thrales. His last literary undertaking was his *Lives of*

JOHNSTON — JOINT-STOCK COMPANIES.

the Poets, which was completed in 1781. He was buried in Westminster Abbey. Boswell's Life may be said to convey a more favourable impression of Johnson's real strength, both in thought and language, than anything in the works which he wrote and published.

Johnston, ALEXANDER KEITH, geographer, was born near Edinburgh 1804, died 1871. His more important works were the National Atlas, first published in 1843; and his Atlas of Physical Geography, published in 1848, which gained him election to the leading geographical societies of Europe and America. Among his minor publications are an Atlas of the Historical Geography of Europe; and a Dictionary of Geography (better known as Johnston's Gazetteer).

Johnston, Providence co., R. I., a flourishing town. Pop. 1890, 9778, an increase of over 4000 in 10 years.

Johnston, ALBERT SIDNEY, Confederate soldier, was born in Washington, Ky., in 1803. His services in the Black Hawk and Mexican wars were distinguished. On the outbreak of the civil war he resigned with reluctance an important command to take part with his native South. In the battle of Corinth, fought April 6, 1862, Johnston received a mortal wound.

Johnston, JOSEPH E., Confederate soldier, was born in Longwood, Va., in 1809. He served in the Florida Indian and Mexican wars. In the civil war he held high commands, surrendering only after the capitulation of Gen. Lee. In 1877 he was elected to U. S. Congress. He died March 22, 1891.

Johnstown, a town in Cambria Co., Pennsylvania, United States, situated on the Conemaugh River about 89 miles S.E. of Pittsburg. It is the centre of a flourishing manufacturing district, and the town and neighbourhood in great part belongs to the Cambria Iron Co., who are said to employ some 5000 people in their iron-mills. The town itself contained some 20,000 inhabitants, and along the Conemaugh River there was a total population of about 30,000, when, on 31st May, 1889, this busy thriving district was laid waste by the bursting of Conemaugh Lake and Reservoir, situated about 10 miles above the town. Houses, churches, and factories were driven by the flood into a mass of ruin, which was finally piled up against the railway bridge at Johnstown, and its destruction completed by the outbreak of fire. Altogether those who perished numbered 9000. Pop. 1890, 21,805.

Johnstown, Fulton co., N.Y., has manuf. of gloves and mittens. Pop. 1890, 7768.

Joint-stock Companies, a species of partnerships in which a number of persons contribute funds or *stock* for the purpose of carrying on a trade or other profitable object. The management is vested in certain members called directors; and the general body of shareholders take no active part in the concerns of the company beyond exercising a control over the acts of the directors on special occasions. The capital is generally divided into equal shares, each member holding one or more, and in proportion to the number participates in the profits. After the stock of a company of this sort has been fully subscribed no one can enter it without previously purchasing one or more shares from some of the existing members. No member can demand payment of his share from the company, but he may, without consent of his fellow-members, transfer his share to another person. In nearly all the States of the American Union these joint-stock companies are now, by statute, invested with some of the privileges of a corporation. Five or more persons associated for any lawful purpose may, by subscribing their names to a memorandum of association, form an incorporated company, with or without limited liability. The distinction between limited and unlimited liability companies is, that if an unlimited company contract any debts, no matter how large, every member is liable, if his fellow-members turn out unable to bear their proportions, to pay the whole of these debts to the extent of his fortune, whereas if the company is limited, each member can in no event be called upon to pay more than he expressly guaranteed. A company may be registered in one of three forms: 1, as a company limited by shares, where the liability of each member is limited to the amount unpaid on the shares; 2, as a company limited by guarantee, where the liability of each member is limited to such amount as he undertakes in the memorandum of association to contribute to the assets of the company if it should be wound up; and 3, an unlimited company, where there is no limit to the liability of the members. In the first two cases the word 'limited' must be added to the name of the company, and the amount of capital, object, place of business, and declaration of the limit or the amount of guarantee must be entered in the memo-

randum of association, which must be accompanied by articles of association providing for the management of the company. In Britain an annual list of members must be forwarded to the registrar of joint-stock companies, an official appointed by the Board of Trade; and there must be at least one office for registration in each of the three kingdoms. A general meeting of the company must be held at least once a year. A company may be wound up whenever it passes a special resolution to that effect; also whenever it does not commence business within a twelvemonth after incorporation, or if it suspends its business for a whole year; also whenever its members are reduced to less than seven; whenever it is unable to pay its debts; and lastly, whenever the court thinks it just and equitable that it should be wound up. Joint-stock companies are now common in all countries.

Joint-tenants are those that hold lands or tenements, or other property, as goods and chattels, by one title, without partition. In a joint-tenancy the last survivor takes the whole, as if the estate had been given to him only, unless any of his companions have conveyed away their shares by deed.

Jointure, in law, a provision for a wife to take effect on her husband's death.

Joinville (zhwan-vēl), JEAN, SIEUR DE, French historian, born in Champagne about 1224, died about 1317. He early entered the service of Thibaut, king of Navarre, and in 1248 raised a troop of nine knights and 700 armed soldiers, and accompanied Louis IX. in his first crusade to the Holy Land. He rose high in favour with Louis, shared his captivity, returned with him to France in 1254, and spent much of his time at court. His *Histoire de St. Louis*, which is one of the most valuable literary productions of the middle ages, has been often reprinted.

Joists, in carpentry, are the beams of timber to which the flooring of rooms and the laths of a ceiling are nailed, and which rest on the walls or girders, and sometimes on both. They are laid horizontally, and in parallel equidistant rows.

Jokai (yō'kà-i), MOR, Hungarian novelist, born at Komorn 1825. His first novel, *Working Days*, was published in 1845, and since then he has produced about 200 volumes of romances and novels, dramatic poems, humorous essays, &c.

Jol'iba. See *Niger*.

Jo'liet, capital of Well Co., Illinois, 37 miles s.w. of Chicago. It has an important

state prison, large limestone quarries, and steel and iron works, &c. Pop. 23,264.

Jolly-boat, one of the smaller boats carried by a vessel, and used especially for communicating with the shore. See *Boat*.

Jomelli (yo-mel'lē), NICCOLO, Italian musical composer, born 1714, died 1774. Amongst his chief works are *L'Errore Amoro*, a comic opera, *Armida*, *Ifigenia*, *Caio Mario*, and other operas. While chapel-master at St. Peter's he composed his *Benedictus Dominus*, a masterpiece of music. His *Requiem* and *Miserere* are particularly celebrated.

Jomini (zho-mi-nē), HENRI, BARON, a distinguished soldier and military historian, born at Payerne, canton of Vaud, Switzerland, in 1779. He first served with the troops of his own country, but in 1804 joined the French army with the rank of major, accompanied Marshal Ney to Germany in 1805-7, and to Spain in 1808, in the capacity first of aide-de-camp, then of chief staff-officer. In 1808 he became a brigadier-general. He distinguished himself during the Russian campaign (1812), but subsequently entered the Russian service. He latterly retired to Brussels, and died at Passy in 1869. Some of his most important works are *Traité des Grandes Opérations Militaires* ou *Histoire Critique des Guerres de Frédéric le Grand*; *Principes de la Stratégie*; *Vie Politique et Militaire de Napoléon*; *Précis de l'Art de Guerre*; &c.

Jonah (Hebrew, signifying *dove*), one of the minor prophets, son of Amittai, and according to 2 Kings xiv. 25 a contemporary of Jeroboam II., was born at Gath-Hepher, in Galilee. The book which bears his name is historical rather than prophetic, and the miraculous event of Jonah remaining three days and three nights in the belly of the fish has been regarded by some as an allegory. Orthodox theologians, however, are generally of opinion that the mention of it by Christ (Mat. xii. 39) obliges us to regard the event as really historical. Jonah's grave is shown at Mosul, the ancient Nineveh, and also at Gath.

Jones, IN'IGO, the reviver of classical architecture in England in the beginning of the 17th century. He was born at London in 1572, and attracted the notice of the Earl of Pembroke, who sent him to Italy to study art. He went to Venice, where the works of Palladio inspired him with a taste for architecture. Having returned to England, he became court architect under James

I. and Charles I. Amongst his best-known works are the Banqueting House at Whitehall, Asburnham House, Covent Garden Piazza, Heriot's Hospital, Edinburgh, and Shaftesbury House. Being a Roman Catholic and the partisan of royalty, he suffered heavy losses during the civil war, and died in poverty June 21, 1652.

Jones, JOHN PAUL, a commander in the American naval service, was born in Kirkcudbrightshire, Scotland, in 1747. His father, whose name was John Paul, was gardener to the Earl of Selkirk. He entered the merchant service, was engaged in the American and West Indian trade, and is said to have realized a handsome fortune. On the outbreak of war between the colonies and mother country he offered his services to the former, and in 1778, being then in command of the *Ranger*, he made a descent on Whitehaven, set fire to the shipping, and plundered the Earl of Selkirk's mansion. Next year, in command of the *Bon Homme Richard* (42 guns) and a small squadron, he threatened Leith, and captured the British sloop of war *Serapis* after a bloody engagement off Flamborough Head. On his return to America he was somewhat neglected by Congress, and in 1788 entered the Russian service with the rank of rear-admiral, but owing to the jealousy of Russian commanders soon retired from this service. He returned to Paris, where he died in poverty and ill health, July 18, 1792.

Jones, OWEN, British artist and decorator, born in 1809. He studied art under Lewis Vulliamy, and travelled in Italy, Turkey, Egypt, and Spain. In the last-mentioned country he collected the materials for his great work on the Alhambra—Plans, Sections, and Details of the Alhambra, completed in 1845. In 1842 Jones published his Designs for Mosaic and Tessellated Pavements, and in 1846 the Polychromatic Ornament of Italy. He was appointed a superintendent of the works for the Great Exhibition of 1851, and afterwards director of decorations at the Sydenham Crystal Palace, and had the special superintendence of the Egyptian, Greek, Roman, and Alhambra Courts. In 1856 his Grammar of Ornament was published, and it still remains a text-book of examples, if not of principles. His last important work was his Examples of Chinese Ornament (1867). He died in London 1874.

Jones, SIR WILLIAM, an English lawyer

and oriental scholar, born in 1746. He was educated at Harrow and Oxford, and early acquired a reputation as a linguist, Hebrew, Persian, Arabic, and even Chinese, besides German, Italian, French, Spanish, and Portuguese, being amongst his acquisitions. In 1770 his translation (in French) of the life of Nadir Shah from the Persian appeared; in 1771 his grammar of the Persian language; in 1774 his *Poeseos Asiaticæ Commentariorum, Libri Sex*; and in 1781 his translation of the seven Arabic poems known as the *Moallakat*. He had been called to the bar in 1774, and in 1783 was nominated judge in the supreme court of judicature, Bengal, and knighted. Here he did much for the furtherance of oriental studies, being one of the first Europeans to study Sanskrit, founding the Royal Asiatic Society, translating the *Sakuntala*, the Ordinances of Manu, besides tales, poems, extracts from the Vedas, &c. He also undertook a digest of the Hindu and Mohammedan laws, which he did not, however, live to complete. He died at Calcutta in 1794.

Jongleurs (zhon-leur), a class of French minstrels in the middle ages who used to wander about entertaining people by song, music, story, &c., and sometimes by juggling feats, tumbling, &c.

Jönköping (yeun-cheup'ing), a town of Sweden, capital of the län of same name, at the southern extremity of Lake Wetter, 83 miles E.N.E. of Gothenburg. It is in general well built, and has manufactures of matches, leather, &c. Pop. 1891, 19,776.

Jonquil (jon'kwil), a bulbous plant of the genus *Narcissus* (*N. Jonquilla*), allied to the daffodil. It has long lily-like leaves, and spikes of yellow or white fragrant flowers. The sweet-scented jonquil (*N. odorus*), a native of southern Europe, is also generally cultivated. Perfumed waters are obtained from jonquil flowers.

Jonson, BEN or **BENJAMIN**, a celebrated English poet, the contemporary and friend of Shakspeare. He was the posthumous son of a clergyman, and was born June 11, 1574, at Westminster. He was placed at the Westminster grammar-school, under Camden, at an early age, where he laid the foundation of his learning, but was ultimately withdrawn, it is said, by his stepfather, a master bricklayer, who wanted his assistance in the business. He soon tired of this occupation, entered the army as a private soldier, and showed much personal courage during a campaign in Holland. Returning

to England he began his career as an actor, and in 1598 his drama, *Every Man in his Humour*, was printed. About this time Jonson was in some danger of the gallows on account of having slain an actor in a duel, and was actually imprisoned for some



Ben Jonson.

time. In 1599 he brought out his comedy of *Every Man out of his Humour*, which was followed by *Cynthia's Revels* (1600); the *Poetaster* (1602); *Sejanus*, a tragedy (1603). The festivities which welcomed the new king, James I., gave a new impulse to the representation of masques, in the composition of which the ready talent of Jonson was employed by the court itself, the celebrated Inigo Jones doing the decorations. In 1604 he had some share with Chapman and Marston in writing *Eastward Ho*, certain passages of which, reflecting satirically on the Scotch nation, drew down the anger of the king, and nearly cost the authors their nose and ears. In 1605 his comedy of *Volpone* or the *Fox* appeared; in 1609 *Epicœne* or *The Silent Woman*; in 1610 the *Alchemist*; in 1611 *Catiline*, a tragedy; and in 1614 *Bartholomew Fair*, a complete picture of Elizabethan low life. In 1613 Jonson made a tour in France as governor of Sir Walter Raleigh's eldest son. In 1618 he visited Scotland, staying for some time with Drummond of Hawthornden, whose notes of his guest's conversation are amongst the best accounts we have of Jonson's personality. In 1619 he returned to England, received the honorary degree of A.M. from Oxford University, and on the death of the poet laureate was appointed his successor, and the salary raised to the sum of £100 by Charles I.

Much of his time was spent at the Apollo, Mermaid, and other taverns, feasting, drinking, and engaging in those brilliant contests of wit in which in earlier days Shakspeare also took part. His latter days were spent, not perhaps in much pecuniary prosperity, but certainly in fame and honour, as the acknowledged chief of English literature. He died Aug. 6, 1637, of an attack of palsy, leaving behind him an unfinished pastoral drama of great beauty, *The Sad Shepherd*. He was buried in Westminster Abbey, where a monument was erected to his memory with the inscription, 'O rare Ben Jonson.' Jonson's best dramas are excellent in plot and development, have strongly conceived characters and excellent traits of humour, but he is sometimes forced and unnatural, and deals perhaps too much with passing manners and eccentricities. He had a genuine lyrical power, seen in his short poems and the songs interspersed in his masques.

Joplin City, Jasper co., Mo., has rich lead and zinc mines, and many smelting furnaces. Pop. 1890, 9943.

Jordaens (yor'dāns), JAKOB, historical and portrait painter, born at Antwerp in 1594. He studied under his father-in-law, Van Oort, and then under Rubens, and has the reputation of being, after Rubens, Antwerp's greatest painter. His pictures, the subjects of which are mostly mythological scenes, and scenes from Flemish popular life, banquets, &c., are to be found in the chief European collections. His style is less elevated and powerful than that of Rubens, but preserves more of the national Flemish humour and realistic force. He died in 1678.

Jordan, the largest river in Palestine, and one of the most celebrated rivers in the world. It rises from several sources, uniting in Bahr el-Hüle, or the Waters of Merom. From this point it flows with a rapid current in a narrow rocky bed, and falls after a southerly course of about 10 miles into Lake Tiberias. Shortly after leaving the south end of this lake it enters a broad valley or *ghor*, called in the Bible 'the plain;' and continuing a southerly but singularly crooked course of about 70 miles direct distance, or 200 including windings, falls into the north end of the Dead Sea, having received the Zerka or Jabbok, also on the left, and numerous smaller affluents. The upper part of the valley of the Jordan is hilly, arid, and barren, but it becomes more level and fertile as it approaches the Zerka. The

river is muddy and full of small fish. In the dry season it is shallow, with an average width of from 30 to 50 yards. At its mouth it is about 180 yards broad and about 3 feet deep. It is subject to great inundations during the winter season. The valley of the Jordan forms one of the most remarkable depressions in the world, the Dead Sea being 1312 feet below sea-level, and the total fall of the river being about 2300 feet.

Jornan'des (properly *Jordanes*), the historian of the Goths, and himself a Goth, was born about 500 A.D., was at first a notary, but afterwards took the monastic vows, and is said to have been appointed bishop of some Italian city, probably Ravenna or Croton. Of his two works the chronicle *De Regnorum et Temporum Successione* is of value only when it approaches his own time. The other work, *De Rebus Geticis*, treating of the Goths, based on the lost history of Cassiodorus, is invaluable.

Jorullo, **XORULLO** (*hō-rul'yō*), a volcano of Mexico, in the department of Michoacan, 160 miles south-west of Mexico, thrown up in 1759; height, about 4150 feet. There are but few signs of activity about the mountain now.

Joseph, one of the two sons of the patriarch Jacob by his favourite wife Rachel. His father's preference for him drew down the enmity of his elder brothers, who sold him to some Ishmaelitish slave-dealers, by whom he was sold to Potiphar, a distinguished officer in Egypt. The story of his elevation to the position of vice-regent of Egypt and the settlement of his father and brothers there is well known (Gen. xxxvii.-l). Authorities still differ as to the period in Egyptian history to which Joseph's life belongs, some placing it before, others under, and others after the time of the Hyksos or shepherd kings.

Joseph, the husband of Mary the mother of Jesus, was a descendant of the house of David though resident at Nazareth, where he followed the trade of a carpenter. Early tradition represents him as an old man at the time of his marriage, and he seems to have died before the commencement of the public ministry of Jesus. His day in the Roman Catholic calendar is the 19th March.

Joseph of Arimathæa, *i.e.* of Ramathaim in Benjamin, a member of the Jewish Sanhedrim, who, though a believer in Jesus, had not the courage to make open profession of his faith. Nevertheless, after the cruci-

fixion he went to Pilate, begged the body of Jesus, and along with Nicodemus buried it in his own garden. According to tradition he came as apostle to England. His day is 17th March.

Joseph I., Emperor of Germany, eldest son of Leopold I., born 1678; became emperor in 1705. He was a zealous member of the alliance against France in the war of the Spanish succession, in which the victories of Marlborough and Eugene won glory for the imperial arms. He died in 1711.

Joseph II., German Emperor, son of Francis I. and Maria Theresa, was born March 13, 1741. He was elected king of the Romans in 1764, and on the death of his father, 1765, German emperor, succeeding his mother, however, in the hereditary estates of the House of Austria only in 1780. He at once commenced an extensive scheme of reforms, but the country was not prepared for such sudden changes, and he was compelled to give up most of his plans. In 1788 he visited Catherine II. at Cherson, and in league with her made war against Turkey. He died in 1790.

Joséphine (*zho-sā-fën*), Empress of the French, was born in Martinique June 24, 1763, being the daughter of Lieutenant Tasscher de la Pagerie. She married in 1779 Vicomte Alexandre Beauharnais, by whom she had two children, Eugène and Hortense. In 1794 her husband, who had been commander of the army of the Rhine, was executed by order of the Convention. She herself had a narrow escape, having been included in the list of proscription. After the fall of Robespierre she paid a visit to Napoleon to thank him for restoring the sword of her husband, and so pleased him that he soon after married her (1796). She became a beneficial element in his life, and her amiable manners won the hearts of everybody and helped to secure her husband's position. When Napoleon ascended the throne in 1804 she was crowned along with him. But the fact that the union was childless stood in the way of Napoleon's ambition to become the founder of a dynasty, and in 1809 Josephine was divorced, retiring to her beautiful seat of Malmaison, with the title of empress-queen-dowager and an annual grant of two million francs. She died May 29, 1814.

Joseph's-coat, a popular American name for *Amaranthus tricolor*.

Joseph's-flower, the *Tragopogon pratensis* or yellow goat's-beard. See *Goat's-beard*.

Jose'phus, FLAVIUS, the historian of the Jews, was born at Jerusalem 37 A.D., and was carefully educated. In 64 A.D. he made a journey to Rome, and was introduced to Poppæa, the wife of Nero. On his return he found his countrymen preparing to throw off the Roman yoke, and having tried in vain to persuade them of the hopelessness of such a struggle, he accepted the post of defending the province of Galilee, and actually held the fortified town of Jotapata against the whole Roman army for forty-seven days. He was captured at the fall of the city, was afterwards present in the Roman army at the destruction of Jerusalem (A.D. 70), and went with Titus to Rome, where, assuming the family name of his patron, Flavius, he lived in learned leisure. Here he wrote (in Greek) *The History of the Jewish War*; *The Antiquities of the Jews*, giving a history of the Jews from the earliest times to the reign of Nero; an *Autobiography*, mostly relating, however, to the time of his military activity; a work on the *Antiquity of the Jewish People*, directed against Apion, an Alexandrian grammarian. The date of his death is uncertain. He certainly saw the end of the century.

Josh'ua, the successor of Moses in the command of the Israelites, was the son of Nun, of the tribe of Ephraim. His name was at first *Hoshea* (help), but was changed by Moses into *Joshua* (Jehovah's help), of which *Jesus* is the Greek form. He was the only one, with the exception of Caleb, who brought back an encouraging report from the land of Canaan. He was nominated by Moses to succeed him in the command of the army of Israel, led the Israelites over the Jordan, and in the course of seven years conquered the greater part of Palestine, and divided the country among the tribes. He died at Timnath-Serah in Mount Ephraim at the age of 110. His history is contained in the canonical book which bears his name, and of which he has been usually regarded as the author; but modern critics have shown that it is a composite narrative, and contains references to many events which took place after Joshua's death.

Josi'ah, King of Judah, succeeded his father Amon at the age of eight years (639 B.C.). He is characterized in the Scriptures as doing 'that which was right in the sight of the Lord.' He took an active part in the reform of public worship, and commenced the restoration of the temple, during

the progress of which the high-priest Hilkiah discovered the book of the law, thought by some to be substantially the same as the book of Deuteronomy. The prescriptions it contained gave a decided direction to the reform movement which the king conducted with great vigour. In his thirty-first year, prompted probably by friendship to the King of Assyria, he marched out against Pharaoh Necho, who was on his way to attack that kingdom. The two armies met at Megiddo, where Josiah was slain.

Jósika (yō'shi-ká), MIKLÓS, BARON, a Hungarian novelist, born in 1796. He entered the Austrian army, but in 1818 resigned his commission, and settled down to literary work. Drawn into politics he became a zealous supporter of Kossuth, and during the revolution of 1848 was a member of the committee of national defence. On the fall of the revolutionary government he escaped to Brussels, where he resided till 1864. He died at Dresden in 1865. Amongst the best of his novels are: *Az utolsó Batóri* (The Last Batóri); *Zryni a Költő* (Zryni, the Poet); *Jósika István* (Stephen Jósika); *A' Csehek Magyarországbán* (The Bohemians in Hungary).

Josquin des Prez (zhos-kan dā prā), a musical composer, born between 1450 and 1455 in Northern France. He received an appointment in 1475 in the papal chapel at Rome, and latterly became chapel-master to Louis XII. He died at Condé in 1521, where he held a canonry.

Joss-stick, in China, a small reed covered with the dust of odoriferous woods, and burned before an idol.

Jotuns (yō'tunz), in northern mythology, immense giants and magicians who had command over the powers of nature, and lived in dark caves in their kingdom of Jotunheim, from which they waged perpetual war against the Æsir, the bright gods of Valhalla. Originally they represented the destructive forces in nature. They were cunning, malignant, versed in witchcraft, but not highly intelligent.

Joudpore. See *Jodhpur*.

Jouffroy (zhö-frwä), THÉODORE SIMON, a French philosopher, born in 1796. He studied philosophy under Cousin, held the position of professor of philosophy in different colleges and normal schools; taught for some years in the College of France, and became a member of the Academy. He died at Paris in 1842. In philosophy he was mainly a follower of the Scottish school of Reid

and Stewart, some of whose works he translated into French. His own principal works are *Mélanges Philosophiques* and *Cours d'Esthétique*. As an original thinker Jouffroy has no claim either to profundity or intellectual brilliancy, but he had a talent for popular exposition, and followed prudent lines of speculation.

Jougs (jugz), an instrument of punishment formerly used in Scotland, consisting of an iron collar which surrounded the neck of the criminal, and was fastened to a wall or tree by an iron chain.

Joule (jöl), JAMES PRESCOTT, D.C.L., LL.D., English physicist, born in 1818. He studied under Dalton the chemist, made researches in electro-magnetism, about 1840 turned his attention to the subject of heat, and ultimately established the theory of the mechanical equivalent of heat. His published work consists mainly of papers read before the Royal Society, of which he was made a fellow in 1850, receiving its medal in 1852 and the Copley medal in 1870. He received in 1878 a civil list pension of £200 in recognition of his services to science. His most important achievement has been that of settling the mechanical equivalent of heat, which established that the quantity of heat capable of increasing the temperature of 1 lb. of water by one degree Fahrenheit, requires for its evolution the expenditure of mechanical energy represented by the fall of 772 lbs. through the space of one foot. He died in 1889. See *Heat*.

Jourdan (zhör-dän), JEAN BAPTISTE, COUNT, marshal and peer of France, born 1762, died 1833. He distinguished himself under Dumouriez, was made a general of division in 1793, defeated the Austrians at Wattignies and at Fleurus, drove them beyond the Rhine, and took the fortress of Luxembourg, but was defeated at Höchst, and again at Würzburg (1796). In 1799, the Directory having given him the command of the army on the Danube, he crossed the Rhine at Basel, but was encountered by the Archduke Charles, who completely defeated him at Stockach. In 1803 he became a member of the senate, and in 1804, on the establishment of the empire, obtained the rank of marshal, the title of count, and a seat in the council of state. After the restoration he was raised

to the peerage. He entered with spirit into the revolution of 1830. He wrote two works—*Mémoires pour servir à l'Histoire de la Campagne de 1796*, and *Opérations de l'Armée du Danube*.

Journalism. See *Newspapers*.

Journey-weight, a term applied at the English mint to the weight of certain parcels of coin, which were probably considered formerly as a day's work. The journey-weight of gold is 15 troy lbs., which is coined into 701 sovereigns, or 1402 half-sovereigns. A journey-weight of silver weighs 60 lbs. troy, and is coined into 792 crowns, or 1584 half-crowns, or 3960 shillings, or 7920 sixpences.

Jovellanos (hō-vel-yä'nōs), GASPAR MELCHIOR DE, Spanish statesman and writer, born 1744, died 1811. It is mainly as a political economist and legislator that he stands in the front rank as a Spanish writer; but he also wrote satires and miscellaneous pieces, a tragedy (*El Pelayo*), &c.

Jovia'nus, FLAVIUS CLADIUS, Roman emperor, was originally captain of the household troops of the emperor Julian, whom he accompanied in the disastrous campaign against the Persians in which Julian lost his life (A.D. 363). After Julian's death he was proclaimed emperor by the troops, but could only extricate his army by ceding to the Persian monarch the five provinces beyond the Tigris. He was found dead in his bed when on his way to Constantinople, 364.

Jowett, REV. BENJAMIN, M.A., LL.D., English scholar, master of Balliol College, Oxford, was born in 1817. He studied at Oxford, was elected to a fellowship in 1838, and became regius professor of Greek in 1855. In 1855 he published a commentary on the Epistles of St. Paul. In 1860 appeared his essay on the Interpretation of Scripture in the celebrated *Essays and Reviews*, for which he was tried on a charge of heresy before the chancellor's court, but was acquitted. In 1870 he became master of Balliol, and in 1871 published his most important work, a translation of the Dialogues of Plato. He has published translations of Thucydides (1881) and the Politics of Aristotle (1885). In 1882 he was elected vice-chancellor of the university.

Juan (hü-än'), the Spanish form of *John*. See *Don Juan*.

Juan (jō'an) **de Fuca**, STRAIT OF, the strait between Vancouver Island and Washington Territory on the west coast of N. America.



Jougs.

Juan Fernan'dez, so called from the name of its discoverer, also sometimes Mas-a-Tierra, an island in the South Pacific Ocean, about 400 miles off the coast of Chile, to which it belongs. It is 18 miles long and 6 miles broad at the broadest part, mountainous, and of rugged aspect. Parts of it are fertile, producing various kinds of timber, peaches, figs, grapes, cherries, &c. There are excellent fish. The island is occupied by some hundreds of settlers, whose chief occupation is the furnishing of fresh vegetables, water, and wood to the whaling or other vessels that call here. De Foe is said to have founded his Robinson Crusoe on the history of the solitary residence here for over four years (1704-9) of a Scotch sailor, Alexander Selkirk.

Juarez (*hū-ā-reth'*), **BENITO PABLO**, President of the Mexican Republic, was born of pure Indian parentage in 1806, and was elected president in 1861. He declared the suspension of public payments for two years to Europeans, a step which occasioned the interference of Britain, Spain, and France. Troops were landed in Mexico in 1862, but Britain and Spain soon retired, leaving Napoleon III. to carry out his views alone. Maximilian of Austria came on Napoleon's invitation to assume the throne, but Juarez, in spite of defeats and losses, continued to head a resistance, and when Napoleon under pressure from the American government withdrew his troops in 1866, the republicans carried all before them. Maximilian was captured and shot after a mock trial, and Juarez was re-elected to the presidency (1867), which he held till he died (1872).

Juba I., a king of Numidia and Mauritania in the first century B.C. On the breaking out of the civil war Juba fought against Cæsar; but being conquered in a battle at Thapsus, and abandoned by his subjects, he slew himself, B.C. 46.—His son, **JUBA II.**, was led in Cæsar's triumph at Rome, was carefully educated, and, having gained the favour of Augustus, received in marriage the daughter of Antony and Cleopatra, and was restored to the kingdom of his father, B.C. 30, which some years after he exchanged for Mauritania. He wrote a history of Rome in Greek, a history of Arabia, treatises on the drama, painting, grammar, &c., of which only fragments are extant. He probably survived till 18 or 19 A.D.

Jubæ'a, a genus of palms. See *Coquito*.

Jubbulpore. See *Jabalpur*.

Ju'bilee, a festival of the Jews, held every

fiftieth year. During this year all slaves or captives were to be released; all estates which had been sold reverted to their original proprietors or their descendants; and the ground was to lie fallow. It has been doubted whether the law of jubilee was ever actually observed until after the return from the Babylonian exile, when, for a time at least, it came into operation.

In 1300 a *R. Catholic Jubilee* was instituted by Boniface VIII., who issued a bull granting plenary indulgence to all pilgrims who should visit Rome that year and perform certain ceremonies. The result was a vast concourse of pilgrims, from whom the church drew so much profit that in 1350 Clement VI. declared a jubilee every fiftieth year, and in 1389 Urban VI. every thirty-third, and in 1470 Paul II. every twenty-fifth year. The Reformation, which interfered with the sale of indulgences, sensibly diminished both the enthusiasm and the profits. The last jubilee, the twenty-second, was held in 1875.

Judæ'a, a term applied after the return of the Jews from exile to that part of Palestine bounded east by the Jordan and the Dead Sea, north by Samaria, west by the Mediterranean, and south by Arabia Petræa. See *Palestine*.

Judah, the fourth son of the patriarch Jacob by his wife Leah, the progenitor of one of the twelve tribes. See *Jews*.

Judas, surnamed *Iscariot*, meaning, perhaps, the man of Kerioth, a village of Judæa, was one of the twelve apostles of Jesus, and betrayed his Master into the hands of the Jewish priests for thirty pieces of silver. Remorse for his crime led him to suicide. The Cainites, Cerinthians, and some other heretics held him in great veneration, believing that he alone saw the necessity for bringing about the fulfilment of prophecy and the atonement for humanity. Others have thought that his object was to oblige his Master to use his miraculous power to defeat his enemies and establish the new earthly kingdom of the Messiah, in which Judas expected to have a high place.

Judas, or **JUDE**, brother of James, one of the twelve apostles. Matthew and Mark call him *Thaddæus* surnamed *Lebbæus*. Nothing is known of his life. By many he is considered the author of the epistle of Jude. See *Jude*, *Epistle of*.

Judas Maccabæus. See *Maccabees*.

Judas-tree (*Cercis Siliquastrum*), natural order Leguminosæ, is a native of the Levant,

Spain, south of France, Italy, &c. It grows to the height of about 20 feet, with pale green leaves and beautiful purple flowers, which are eaten mixed with salad or made into fritters. *C. canadensis*, or red-bud, another species, growing in Canada and the United States, is smaller.

Jude, EPISTLE OF, one of the books of the New Testament. Its canonicity was questioned by the primitive church, and often since. The Asiatic churches did not make use of it till the fourth century, nor was it known in the West till towards the close of the second. Its quotation from the apocryphal book of Enoch raised a prejudice against it, but it was eventually allowed to take its place as a portion of the sacred canon. It is a passionate denunciation of heretics and false teachers, and has been supposed by some to be written by Judas, the brother of the Saviour, and not by Judas the brother of James (see above).

Judge, a person duly invested with authority to determine causes or questions between parties according to law. The term is quite a general one, being applicable to any one appointed to sit in a court of law and try causes; but certain judges are designated by some particular title, as *justice*, *lord-justice*, &c. The judge at common law decides points of law, and enables the jury rightly to decide questions of fact, while in equity he decides both classes of questions. A judge cannot be prosecuted for the consequences of his decisions, except in the case where he may have acted without jurisdiction, nor can he officiate in a case where he has a personal interest, unless it be merely his common interest as a citizen, ratepayer, &c.

Judge Advocate, an officer appointed to preside at the proceedings of courts-martial, his duties being to summon witnesses, administer oaths, take a minute of the proceedings, advise the court on points of law, &c. In Britain (as also in the U. States) there is an official called the Judge Advocate-general, to whom the proceedings of courts-martial are transmitted. He has also to advise the commander-in-chief and secretary of state for war in legal matters. The judge advocate-general must be a member of the House of Commons and of the ministry. Under him is a deputy whose office is permanent.

Judges, in Hebrew history. See *Jews*.

Judges, BOOK OF, a canonical book of the Old Testament, so called because the greater

part of the narrative is occupied with the history of the judges who were raised up to deliver their countrymen from the oppressions of their neighbours. The first chapter, although formally connected with the book of Joshua by the opening sentence, evidently contains a separate portion of the history of the Israelitish invasion of Canaan, the first settlement, indeed, west of the Jordan, in which the tribes of Judah and Simeon play a distinct part in the conquest. The 6th verse of the 2d chapter again connects the work with the concluding part of the book of Joshua, and in the chapters which follow the history of the nation is written from an ideal and poetic point of view, which gives it unity, the judges being represented as successive rulers, although in most cases their history and influence were merely local. The third part of the book begins at chap. xvii., and has no formal or chronological connection with what has gone before, and has sometimes been called an appendix.

Judgment, in law, the judicial determination and decision of a court in an action. It is either interlocutory or final. In the former case it is given only on some particular point or proceeding, and does not complete the action in the same way as the final judgment, upon which, unless it be appealed against, suspended, or recalled, execution may follow.

Judgment-debt, in law, a debt secured to the creditor by a judge's order, and in respect of which he can at any time attach the debtor's goods and chattels. Such debts have the preference of being paid in full, as compared with simple contract debts.

Judicial Committee of the Privy-council, an English tribunal (first established by 2 and 3 William IV. c. 92) for the disposal of appeals from colonial and ecclesiastical courts. It consists of members of the privy-council who are or have been judges in the highest courts, including the lord-chancellor, lord chief-justices, judges, vice-chancellors, masters of the rolls, &c.

Judicial Separation. In English law, by the Divorce Act of 1857 judicial separation may be obtained, either by the husband or the wife, on the ground of adultery, cruelty, or desertion without cause for two years and upwards, or by the wife, on conviction of the husband of aggravated assault. A judicial separation places the wife in the position of a *feme sole* during the continuation of the separation, and if she die intestate her property is dealt with as if her

husband were dead. On the other hand her husband is in no way liable for her contracts or torts; but if he has been ordered by the court to pay her alimony, he will be liable for necessities supplied to her if he have failed to pay her alimony. Neither can marry again during the life of the other. A divorce (*a mensa et thoro*), from bed and board only, is granted in nearly all the States of the American Union.

Judith, widow of Manasses, a Jewish heroine, whose history is given in the apocryphal book which bears her name. Judith is represented as going out to the tent of Holofernes, an Assyrian general who was besieging Bethulia, the city in which she lived, charming him with her beauty, and taking advantage of the admission to his tent, thus afforded to her, to cut off his head with his own sword while he slept.

Judy. See *Punch and Judy*.

Juel (yu'el), **NIELS**, a Danish admiral, born in 1629 at Copenhagen. He served in the Dutch navy under Tromp and De Ruyter against the English and the Moors of Barbary, entered the Danish service in 1656, was made admiral, took the island of Gothland from the Swedes in 1676, and defeated them the following year in the famous sea-fight in the bay of Kjöge. He died April 8, 1697.

Juggernaut. See *Jagannâtha*.

Juggling. See *Legerdemain*.

Juglanda'ceæ, the walnut tribe, a nat. order of exogenous plants, chiefly found in North America. They are trees with alternate pinnate stipulate leaves, and unisexual flowers, the males in catkins, the females in terminal clusters or loose racemes. Besides the walnut the order includes the butternut and hickory.

Jug'ular Vein, one of the large trunks by which the greater part of the blood that has circulated in the head, face, and neck is returned to the heart. There are two on each side, an external or superficial, and an internal or deeper.

Jugur'tha, a king of Numidia, a natural son of Masinissa. Micipsa, his father's brother, and king of Numidia after Masinissa (B.C. 149), adopted him, and brought him up with his own sons, Adherbal and Hiempsal. Micipsa did his best to conciliate him, and declared him joint-heir to the crown with his two sons. But after the death of Micipsa Jugurtha had Hiempsal murdered and drove Adherbal from the country. Adherbal appealed to Rome, and after several Roman expeditions into Numidia, Jugurtha

was captured (B.C. 106), led in the triumph of Marius at Rome, and finally thrown into a dungeon, where he was starved to death.

Juiz (ju'is) **de Fora**, or **PARAHYBUNA**, town of Brazil, province of Minas Geraës, on the Parahybuna River. Pop. 8000.

Ju'jube, the popular name of a genus of spiny and deciduous shrubs or small trees, genus *Zizyphus*, nat. order Rhamnaceæ. The species are numerous, and of several the fruit, which is blood-red or saffron-



Jujube (*Zizyphus vulgaris*).

coloured with a sweet granular pulp, is wholesome and pleasant to eat. The common jujube (*Z. vulgaris*) is a native of Syria, from which it was introduced into Europe. The fruit is dried, and forms an article of commerce. *Z. Lotus*, which some believe to have given name to the ancient Loto-phagi, a shrub 2 or 3 feet high, is a native of Persia and the north of Africa. *Z. spina Christi*, or Christ's Thorn, is said to have furnished the branches of which our Saviour's crown of thorns was made.—The name jujube is also given to a confection made of gum-arabic or gelatine, sweetened and flavoured so as to resemble the jujube fruit.

Jujuy (hu-hö'i), a town of the Argentine Republic, capital of a prov. of same name, is situated in the Rio Grande, and carries on an active trade with Chili and Bolivia. Pop. 5000.—The province has an area of 27,000 sq. miles, and a pop. of 90,000.

Julep (from Persian, *gulâb*, rose-water), a sweet drink; specifically, in medicine, a solution of sugar in aromatic water, but not so concentrated as syrup. In the United States the name is given to a drink composed of spirituous liquor, as brandy or whisky, sugar, pounded ice, and a seasoning of mint. It is also called mint-julep.

Julia, the only child of the emperor Augustus, was his daughter by his second wife Scribonia, and was born B.C. 39. She was first married (B.C. 25) to her cousin, the young Marcellus, and afterwards to Marcus Vipsanius Agrippa, to whom she bore three sons and two daughters. On Agrippa's death, in B.C. 12, she was married to Tiberius, who left her on account of her licentiousness. Augustus banished her to Pandataria, a desolate island on the coast of Campania, ultimately allowing her to live in Rhegium. After the death of the emperor, Tiberius treated her with great severity. She died A.D. 14, in poverty and distress. Her son Agrippa had been put to death by Tiberius shortly before.

Julian, FLAVIUS CLAUDIUS JULIANUS, a Roman emperor, whom ecclesiastical writers have surnamed the *Apostate*, son of Julius Constantius (brother of Constantine the Great), was born at Constantinople 17th November, 331. When hardly six years old his father and several members of his family were murdered by the soldiers of his cousin the Emperor Constantius. He was brought up in the Christian religion, studied philosophy and letters, and resided in Athens, where he was induced to embrace Paganism. Having received command of an army against the Germans, he defeated them at Strasburg, and drove them beyond the Rhine. He also displayed great talent as an administrator in Gaul. The emperor now became jealous of Julian, and recalled his best troops under pretence that he wanted to employ them against the Persians. This order caused a rebellion among the soldiers, who proclaimed their leader Julian emperor in March, 360, in spite of his own resistance. Constantius prepared to proceed against him, but soon after died, and Julian was generally recognized as emperor. He began by putting a stop to many abuses, and limiting the splendour of his court, and was thus able to remit to the people the fifth part of all their taxes. He sought to restore the heathen worship in all its splendour, and on that account opposed Christianity as much as was in his power, without, however, persecuting the Christians themselves. He even sought to falsify the words of Christ by rebuilding the Jewish temple. In 363 he headed an expedition against the Persians, and took several cities, but was mortally wounded June 26, 363. He was an able ruler, and had also a reputation as an

author. Some of his works have come down to us, including speeches, letters, and satirical pieces; the latter are distinguished for wit and humour. He wrote also a work against the Christian religion, of which we have yet some extracts.

Julian Calendar. See *Calendar* and *Epoch*.

Jülich (yü'lih), a town of Rhenish Prussia, 17 miles north-east of Aix-la-Chapelle. It was long the capital of an independent duchy. Pop. 5234.

Julien (zhù-lē-an), STANISLAS-AIGNAN, the leading Chinese scholar of his day, was born at Orleans 1799, and died in 1873. Possessed of an extraordinary linguistic faculty, he taught himself Greek, English, Italian, Spanish, Portuguese, and German, and in 1823 commenced the study of Chinese under Abel Rémusat. At the end of twelve months he published a Latin translation of the philosopher Mencius. Henceforth ancient and modern Chinese, Mantchu, the Mongolian tongues, and latterly Sanskrit, were the subjects of exact and profound study. In 1832 he became professor of Chinese at the Collège de France; librarian at the Bibliothèque Nationale, 1839; president of the college, 1855; commander of the Legion of Honour, 1863. His most important work was entitled *Voyages des Pèlerins Bouddhistes* (Paris, 1853-58).

Juliers. See *Jülich*.

Julius, the name of three popes.—**JULIUS I.**, born in Rome, chosen pope in 337; died in 352. He summoned a council which approved his conduct in sustaining Athanasius in his contest against the Arians in 342.—**JULIUS II.** (Giuliano della Rovere), was elevated by his uncle Sixtus IV. to the rank of a bishop and cardinal, was appointed papal legate to France, in 1503 was elected pope, and died 1513. Immediately on his elevation to the pontificate he planned the complete re-establishment of the papal sovereignty in its ancient territory, and the extinction of foreign domination and influence in Italy. Refusing to attend the Council of Pisa convened by the King of France, he in 1511 formed the 'Holy League,' to which Spain, England, and Switzerland were parties. In 1512 he made open war against Louis XII. The French defeated the papal army near Ravenna, but were soon after driven out of Italy. He is considered one of the most immoral of the popes, but was a far-sighted and patriotic sovereign, and a liberal and judicious patron

of art and literature. To procure means for building St. Peter's he ordered the sale of indulgences, which was one of the immediate causes of the Reformation.—JULIUS III. (Giovanni Maria Giocchi), a Roman of low birth, was made cardinal by Paul III. in 1536, took an active part in the Council of Trent as papal legate, was elected pope in 1550, and in the following year reopened the Council of Trent, which had been suspended for upwards of two years. He endeavoured to effect a union with the Nestorians, and commissioned Cardinal Pole to organize, in conjunction with Mary, the reunion of England with Rome. He died in 1555.

Julius Cæsar. See *Cæsar*.

Jul'lundur. See *Jalandhar*.

Ju'lus. See *Iulus*.

July', the seventh month in our calendar, having 31 days. In the Roman year it bore the name of *Quintilis*, as originally the fifth month. Its change of name to *Julius* was in honour of Julius Cæsar, who was born on the 12th of the month.

Jumilla (*hö-mël'yä*), a town of Spain, in the province of and 35 miles N.N.W. of Murcia. Pop. 13,886.

Jum'moo, or JAMU, a portion of the state of Cashmere. See *Cashmere*.

Jum'na, a river of Hindustan, which rises in the Himalayas, in the native state of Garhwal, near Jamnotri, at the height of 10,849 feet. It flows in its upper course in a generally s.w. direction, then bends to the south-eastward, and passing the cities of Delhi and Agra falls into the Ganges at Allahabad, after a course of 860 miles. Some trade is carried on by means of clumsy barks. Two important irrigation works—the Jumna Eastern and the Jumna Western Canals, derive their supply of water from this river. The former is 160 miles long, and irrigates about 250,000 acres annually. The latter has a length of 433 miles, and irrigates on an average about 360,000 acres.

Jumnoutri. See *Jamnotri*.

Jumping-deer, the black-tailed deer (*Cervus Lewisii*), found in the United States to the west of the Mississippi.

Jumping-hare (*Pedetes capensis*), a species of jerboa found in Southern Africa, and so named from its general resemblance to a hare, whilst its jumping mode of progression, necessitated by the elongated nature of the hind legs, have procured for it its specific and popular distinction.

Jumping-mouse (*Meriones hudsonicus*)

is found in Labrador and North America generally, but is especially an inhabitant of the fur territories. Like the jumping-hare, it is classified by some along with the jerboas, and is one of the smallest of these forms.

Jumping-rabbit, the *alactaga* (which see).

Juna'garh, a native state of India, in Gujarat, Bombay Presidency; area 3283 sq. miles. The surface is generally level, but rises on the Girnar Hills to 3666 feet. The soil is generally good, but irrigation is extensively required. The nawab or ruler pays tribute both to the British government and to the Gaekwar of Baroda. Pop. 387,499.—The capital, JUNAGARH, situated under the Girnar and Datar Hills, is one of the most picturesque cities in India, and has recently been greatly improved by the erection of public and other buildings. Pop. 24,679.

Jun'ceæ, or JUNCA'CEÆ, the rush order, a small natural order of endogenous plants, so named from the typical genus *Juneus*. It is principally composed of obscure herbaceous plants with brown or green glumaceous hexandrous flowers, the perianth being in two series, as in Liliaceæ, but calycine instead of petaloid. Some of them, as the common rush, are employed for making mats, chair-bottoms, and brooms.

Juncus. See *Juncaceæ* and *Rush*.

June (Lat. *Junius*), the sixth month in our calendar. It consisted originally of twenty-six days, to which it is said Romulus added four, and Numa took away one. Julius Cæsar again lengthened it to thirty days, and it has ever since remained unaltered.

June-berry, a North American wild tree (*Amelanchier canadensis*) common in Canada and the States, and allied to the medlar. The fruit is pear-shaped, about the size of a large pea, purplish in colour, and a good article of food. *Service-berry* and *Shadbush* are other names.

Jung (yung), JOHANN HEINRICH, commonly called *Jung Stilling*, German writer, was born 1740 and died 1817. Poor in his youth, and apprenticed to a tailor, he at length succeeded in studying medicine at Strasburg, where he lived in intimacy with Goethe, and afterwards became a physician at Elberfeld. He was subsequently professor at Heidelberg, then for a number of years at Marburg, and latterly at Heidelberg again. He has described himself the

greater part of his life in Heinrich Stilling's *Leben* (1806), and Heinrich Stilling's *Alter* (1817). His works dealing with pietistic mysticism are numerous, including *Theobald oder die Schwärmer*, *Das Heinweh*, &c. Much opposition was excited by his strange works on spirits—*Theorie der Geisterkunde* (Theory of Spirit-knowledge), and the *Apology* for the same, which is connected with his *Scenen aus dem Geisterreiche* (Scenes from the Spirit-world).

Jung, SIR SALAR, K.C.S.I., Dewan or Prime Minister of Hyderabad, was born in 1829, and died in 1883. He is chiefly remembered for the energy with which he held in check his native state during the Mutiny in 1857–58. When he visited England in 1876 he was knighted in recognition of his valuable services to British rule in India.

Jung-Breslau. See *Inowracław*.

Jungermanniaceæ, a group of cryptogams, closely resembling mosses, usually regarded as a sub-order of *Hepaticæ*, but sometimes classed as a separate natural order. Most of them have distinct leaves. They inhabit the trunks of trees or damp earth, in cool moist climates.

Jungfrau (yung'frou; 'Maiden'), a mountain of Switzerland, in the Bernese or Helvetic Alps, on the frontiers between the cantons of Bern and Valais, 12 miles S.S.E. Interlaken. It is one of the most magnificent mountains in Switzerland and the loftiest calcareous mountain in Europe; height 13,670 feet. It was first ascended in 1804.

Jungle (jung'gl), properly an Indian term applied to a desert and uncultivated region whether covered with wood and dense vegetation or not, but in English it is applied to land covered with forest trees, thick impenetrable brushwood, or any coarse rank vegetation.

Jungle-fever, a disease prevalent in the East Indies and other tropical regions, a severe variety of remittent fever. It is characterized by the recurrence of paroxysms and of cold and hot stages. The remissions occur usually in the morning and last from eight to twelve hours, the fever being mostly typically developed at night.

Jungle-fowl, a name given to two groups of birds, the one a native of Australia, the other of India, Java, &c. The jungle-fowl of Australia is *Megapodius tumulus*. See *Megapodius*. The other birds called jungle-fowl are of the same genus as the domestic fowl, which is believed to be derived from

one or other of them. The Indian jungle-fowl *Gallus Sonneratii* is abundant in the higher wooded districts of India. It is about equal in size to an ordinary domestic fowl, but more slender and graceful in its form; the colours are rich and beautiful.

Junin (hö-nēn'), a department of Peru, embracing the wildest parts of the Cordilleras; area about 28,000 sq. miles; pop. 209,871.

Ju'niper, the name of hardy exogenous evergreen trees and shrubs of the genus *Junipërus*, chiefly natives of the northern parts of the world. They belong to the natural order *Coniferæ*, group *Gymnospermeæ*. About twenty species are known, the most important of which are the *J. communis*, *J. sabina*, or *savin*, *J. virginiana*, and *J. bermudiāna*. *J. communis*, or common juniper, is a common bush growing wild in all the northern parts of Europe, and abundant on the mountains of



Juniper (*Junipërus communis*).

Wales, Scotland, and Ireland, and on low ground in the northern parts. The berries require two years to come to maturity, when they assume a bluish-black colour. They are used extensively in Holland in the preparation of gin, which owes its characteristic flavour to them. They yield an essential oil, which is a powerful diuretic. *J. sabina* or *savin* also yields a powerful diuretic, and an oil which is a local irritant. *J. virginiana* and *J. bermudiāna* are trees. The former is the common red cedar of North America; the latter is known as Bermudas cedar. Both yield a wood used by cabinet-makers, &c., and in the manufacture of pencils.

Ju'nius, a signature attached to certain letters on public affairs which first appeared in *The Public Advertiser*, a London paper published by Woodfall, from which they were copied into most of the other journals of the time. The earliest bears date January 21, 1769; the last, January 21, 1772. After they were completed they were collected and published by Woodfall, with a dedication to the English nation and a preface by the author. Other letters bearing the same characteristics, but having different signatures, appeared between

April 28, 1767, and May 12, 1772, and are given in the younger Woodfall's edition as the *Miscellaneous Letters*. This edition was published in 1812 in three vols., and included Junius' private letters to Mr. H. S. Woodfall, and a preliminary essay by Dr. J. Mason Good. An enlargement and improved edition was published in Bohn's *Standard Library*, edited by John Wade, with an essay by the editor in favour of the claims of Sir Philip Francis to the authorship. Although fully a century has elapsed since the publication of these papers, their authorship seems as far from being settled as ever. In seeking for a probable author of these letters the chief difficulty has been to find any one who combined the knowledge, circumstances, distinctive opinions, and literary skill displayed by Junius. He supported the court party against America, favoured triennial parliaments, and opposed the abolition of rotten boroughs. He was evidently well acquainted with court and city politics, the management of public offices, the private intrigues of the time, and if not a lawyer he had considerable knowledge of law. Besides this he seems to have been a man of rank and fortune, for we find him writing to Woodfall: 'I am far above all pecuniary views;' and he expressly asserted that, 'My rank and fortune place me above a common bribe.' With these characteristics and this wide information he united a boldness, vehemence, and rancour which, combined with his epigrammatic and unsparing invective, rendered him an object of terror to those whom he attacked. Public suspicion at the time was fixed most strongly on Burke and Viscount Sackville. But Burke denied the authorship spontaneously to Dr. Johnson, and apart from considerations drawn from his temper, style, and turn of thinking, on several points Burke and Junius were in direct opposition to each other. That Viscount Sackville was the author received considerable belief at the time. His rank, fortune, temper, and talents, concur to make it probable, while the friends and enemies of Sackville and Junius coincide. Yet the proof is far from complete in favour of this hypothesis. An attempt was also made to show that Lord Temple was the author, on the ground that the political and personal connections of Junius and Lord Temple were the same, and that his talents, age, circumstances, style of writing and thinking, rendered the hypothesis probable. The

opinion that Sir Philip Francis (died 1818) was Junius has been probably the most common. But the internal argument is against the supposition: Francis was but twenty-seven when the first letters were written, and he never displayed before or after any proofs of a capacity or knowledge equal to the compositions of Junius. This opinion was supported by Macaulay; but of his five grounds for ascribing the authorship to Sir Philip Francis, two of them are known to be erroneous suppositions.

Junius, FRANCISCUS, Dutch scholar, born 1589, lived for about thirty years in England, then in Holland, and died at Windsor in 1677. Of Anglo-Saxon and the ancient Germanic literatures he had an extensive knowledge; he published a glossary of Gothic, and a work on English etymology (*Etymologicum Anglicanum*), and left a valuable collection of MSS.

Junk, a flat-bottomed ship used in the waters of China and Japan, sometimes reaching 1000 tons. It has a high fore-



Chinese Junks.

castle and poop, and ordinarily three masts of considerable height, each mast being in one piece, with a lug-sail, generally of bamboo splits. The bow is bluff, the stern full, and there is a very large rudder.

Juno, the most exalted divinity of the Latin races in Italy next to Jupiter, of

whom she was the sister and wife; the equivalent of the Greek Hera. She was the queen of heaven, and under the name of Regina (queen) was worshipped in Italy at an early period. She bore the same relation to women that Jupiter did to men. She was regarded as the special protectress of whatever was connected with marriage, and females from birth to death had her as a tutelary genius. She was also the guardian of the national finances, and a temple, which contained the mint, was erected to her under the name of Juno Monēta on the Capitoline. See also *Hera*.

Junot (zhù-nō), ANDOCHE, Duke of Abrantes, French marshal, was born in 1771 and died 1813. He was intended for the bar, but on the outbreak of the revolution joined a volunteer battalion, and soon attracted notice. At the siege of Toulon, in 1793, he became secretary to Napoleon, who afterwards took him with him into Italy and Egypt in the capacity of aide-de-camp. In Egypt he was advanced to the rank of general of brigade. In 1800 he was made commandant of Paris, and he particularly distinguished himself at the battle of Austerlitz in 1805. In 1807 he was sent with an army into Portugal, and made his entry without opposition into Lisbon, his success being rewarded with the title of Duke of Abrantes. On the arrival of the British he first allowed himself to be defeated at Vimeira, and was then obliged to submit to the humiliating convention of Cintra. Although he subsequently took part in the campaigns (1809) against Austria, (1810) against Spain, and (1812) against Russia, he failed to retrieve his reputation. In 1813 he became insane, and lost his life by leaping from a window.

Junta (Spanish, an assembly) in Spain, a high council of state. It was originally applied to an irregularly summoned assembly of the states, as distinguished from the Cortes or parliament regularly called together by the authority of the king.

Jupati Palm (jū-pā-tē'; *Raphia tawdigēra*), a palm which grows on the rich alluvial tide-washed soil on the banks of the Lower Amazon and Pará rivers in Brazil. The trunk is only 6 or 8 feet high and 1 foot in diameter. The leaves rise nearly vertically from the trunk, bending out on every side in graceful curves, forming a magnificent plume 70 feet in height and 40 in diameter. Leaves have been measured 48 and 50 feet long, and even these are not the largest. The leaf-stalks,

which measure from 12 to 15 feet in length, are used by the natives for a variety of purposes, as for the walls of houses, baskets, boxes, &c. Their rind yields fibrous filaments (*raphia fibre*), which are imported into Europe for agricultural tie-bands, &c.

Ju'piter, or JUPITER, the supreme deity of the Latin races in ancient Italy, the same as the Greek *Zeus*, and the Sanskrit *dyaus* (which means the sky); the second part being the same as the Latin *pater*, father. As the supreme deity

Jupiter received from the Romans the title of *optimus maximus* (best greatest), and as the deity presiding over the sky he was considered as the originator of all the changes that took place in the sky. From him accordingly proceeded rain, hail, and the thunderbolt, and he it was



Jupiter.

that restored serenity to the sky after it had been obscured by clouds. Hence the epithets of Pluvius (rainy), Tonans (thundering), &c., were applied to him. The most celebrated of his temples was that on the Capitoline Hill dedicated to him as Jupiter Optimus Maximus, jointly with Juno and Minerva. He was represented with a sceptre as symbolical of his supreme authority. He maintained the sanctity of oaths; he was the guardian of all property; and every Roman was believed to be under his protection, and that of his consort Juno, the queen of heaven. White animals were offered up to him in sacrifice, his priests wore white caps, and his chariot was represented as drawn by four white horses.

Jupiter is the largest planet of the solar system, and the fifth (excluding the asteroids) in order of distance from the sun. His mean diameter is about 85,000 miles; his polar diameter about 82,200; his mean distance from the sun 475,692,000 miles; his period of revolution round the sun 11 years

JUPITER AMMON—JURY AND JURY TRIALS.

10½ months; his orbit is inclined to the ecliptic at the angle 1° 18' 40"·3. The inclination of his axis is very small (3° 5' 30"), so that changes in the seasons must be almost unknown; his volume is 1233 times that of the earth, but his mass is only 300·857 times. His surface shows belts of dark and light shade, which are usually, but not always parallel to each other, undergo quick changes, and seem as though they merged into one another. To account for these rapid changes in his atmosphere it seems reasonable to believe that his interior mass is intensely heated similarly to that of the sun, hence the intense light proceeding from this planet. Jupiter has four moons, Io, Europa, Ganymede, and Callisto; they were discovered by Galileo in 1610; they are at average distances of from 267,380 to 1,192,820 miles from the planet; they appear, like our moon, to make one revolution on their axis while passing once round the planet, the time of one revolution being from 1 day 18 hours 27 minutes to 16 days 16 hours 32 minutes. Europa, the smallest, has a diameter of 2099 miles; Ganymede, the largest, has a diameter of 3436 miles. The moons appear from the earth to move in nearly straight lines from one side of the planet to the other, so that the planes of their orbits are nearly the same as the ecliptic and the orbit of Jupiter; they are eclipsed in the shadow of the planet, and their own shadows may be seen passing over the planet's surface. From observation of the eclipses of Jupiter's satellites Römer discovered that the propagation of light is not instantaneous, and thus calculated its velocity.

Jupiter Ammon. See *Ammon*.

Jupon, JUPPON, a tight-fitting military garment without sleeves, formerly worn over the armour, and descending just below the hips. It was frequently richly emblazoned and highly ornamented.

Ju'ra, an island of Scotland, one of the inner Hebrides, in the county of Argyll, separated from Islay by a strait 1¼ mile wide, having the whirlpool of Corryvreckan between it and the island Scarba; length 36 miles, mean breadth 7. Its general aspect is exceedingly wild and rugged, and it is chiefly devoted to the rearing of cattle. Pop. 773.

Jura (zhü-rä), a department in the east of France, bordering on Switzerland; area, 1938 sq. miles. A large part is covered by the Jura mountains (see next art.), and it is drained by the Ain and the Oignon. The

pastures are both extensive and rich, and the cattle reared on them, together with their dairy produce (including Gruyère cheese), form the chief source of wealth. Iron is worked, marble and alabaster abound, and there are salt springs in different quarters, from which salt is made. Lons-le-Saulnier is the capital. Pop. 1891, 273,028.

Jura, a chain of mountains in Central Europe, partly belonging to France, partly to Switzerland, between which they form a sort of natural barrier, extending from south-west to north-east, and exhibiting a number of parallel ridges. The greatest length is some 200 miles, from Belley in France, department of Ain, to the banks of the Rhine; and the greatest breadth about 63 miles, between the Lake of Geneva and the banks of the Doubs. The principal geological formation is the Jura limestone, with green-sand, belonging to the lower cretaceous series. Stalactite caves are numerous. The two chief rivers which have their source in the chain are both French—the Ain and the Doubs—and descending from its western slopes, belong to the basin of the Rhone. Its highest points are Crêt de la Neige, Reculet, Mont Tendre, and Dôle, the heights of which are respectively 5651, 5645, 5517, and 5514 feet.

Jurassic System, the name given by geologists to what is termed in England the *Oolitic system* of strata, being very characteristic of the Jura Mountains; and also used in a wider sense to include both the Oolite and Lias.

Jurisprudence, the science of law.—*Medical jurisprudence*, forensic medicine (which see).

Jurua (zhü-rü-ä'), a little-known river of north-western Brazil, which rises on the borders of Peru and enters the Amazon on the right. Length, 700 or 800 miles.

Jury and Jury Trials. The origin of trial by jury is not traceable to any single legislator or any particular period. It seems to have had its beginning in certain primitive customs of the northern European races, and received special developments from different nations. By the Anglo-Saxons a person who was accused of crime was permitted to summon twelve of his neighbours, called compurgators, who swore to his innocence. This was the origin of an institution which took settled and vigorous form after the Norman Conquest, gradually developing into its present form.

In criminal trials two juries act, the *grand*

JURY AND JURY TRIALS.

jury and the *petty jury*. The *grand jury* may consist of any number more than eleven and less than twenty-four men, who have been summoned by a mandate from the sheriff of the county. Their names are returned on a piece of parchment which is called a *panel*. The oath having been administered, they are usually instructed by the presiding judge in the nature and number of the offences about to be brought before them. They then proceed to consider in private the statement or *indictment* which is brought against the accused by the prosecution. Should they agree, to the number of twelve, that the accusation has a basis of truth, they bring into court what is called 'a true bill.' If, on the contrary, they find that there is no sufficient foundation for the accusation, they *ignore* the bill, and require the dismissal of the accused. When a true bill is found by the grand jury it usually forms the basis of the subsequent prosecution. The grand jurymen are qualified by being a freeholder of his county, to what amount is not clearly defined.

Petty or *petit juries* consist of twelve persons, and no more, for the trial of all criminal offences, and of all issues of fact in civil cases at the common law. To act as jurymen any man is qualified, who, being above the age of twenty-one and under sixty, has £10 yearly in freehold or £20 in leasehold, or who, within the same county, has paid an inhabited-house duty on a value of not less than £30 in Middlesex, or upon £20 in any other county. Aliens who have been domiciled for ten years are qualified; convicts and outlaws are disqualified. If a special jury is demanded higher property qualifications are required in those fitted to act as jurors. In the case of persons summoned to serve on any of the inferior courts the fine in case of default is not to be more than 40s. or less than 20s. The jury is selected by ballot from those summoned. If all the jurors do not appear, or any of them are justly objected to and set aside, in virtue of the right of challenge exercised by the parties to a suit (see *Challenge*), the deficiency may be supplied from among the bystanders having suitable qualifications. The jury being then sworn is placed in the jury-box, and the evidence given. No juror is at liberty to leave the box without permission of the court. Unless the case be a criminal one in which the prisoner is charged with a misdemeanour, the jury are allowed to go home on engaging not to allow themselves to

be spoken to on any subject connected with the trial. When the prisoner is charged with treason or felony the jury are usually allowed to retire only in custody of the sheriff and his officers, who are sworn to keep them together, and not to speak to them with reference to the trial. When the evidence has been led it is usual for the presiding judge to instruct the jury in the points of law which apply to it. It is thus that their duties are divided—the jury dealing with the facts, and the judge with the law of the case. The jury usually form an independent judgment upon the facts, and their finding is considered final. To consider their verdict they usually withdraw to a private room, where no intercourse with other persons is permitted, and where, when the session is protracted, food and other necessities are supplied. Upon returning into court they publicly assent to such verdict as they have agreed upon. If they fail to agree among themselves the jurymen are discharged by the judge, and the cause, if it is civil, can be tried anew. When it is a criminal case no new trial is possible.

Another kind of jury is the *coroner's jury*, summoned to inquire into cases of sudden or violent death. The inquiry is made in presence of the body, and at the place where the death happened. The jury may consist of any number above eleven, and usually numbers twenty-three; twelve must concur in the finding. The persons found guilty are reserved for trial by a petty jury.

In Scotland there is no coroner's jury, and the only case in which a grand jury is summoned is that of treason. In all other criminal trials in Scotland the jury consists of fifteen jurors, and a majority is sufficient to convict. In civil cases the number of jurors is, as in England, twelve, and they must as a rule be unanimous before they give any verdict. As in England, jurors are either special or common. The qualification of a common jurymen is that he be between the ages of twenty-one and sixty, and in the receipt of £5 yearly as heritage, fee, or life-rent, or has movable property valued at £200. Any juror who fails to appear without sufficient excuse given is liable to be fined in a sum not exceeding £5, and not less than £2. Besides the verdicts of 'guilty' or 'not guilty' it is permitted to the jury in Scotland to return a verdict of 'not proven.' This releases the person, but stains the character of the accused.

In the United States, in Canada, and the

other British colonies, jury trials are essentially the same as in England. In France they are only applicable to criminal cases, and the verdict is returned by a majority. Trial by jury is in force in Italy, and in the German empire.

Jury-mast, a temporary mast erected in a new ship, or in place of one that has been carried away by tempest, battle, &c.

Jussieu (zhûs-yeu), a French family belonging to Lyons, which has produced a number of distinguished botanists, of whom the following are the principal:—**ANTOINE DE**, born 1686, died 1758.—**BERNARD DE**, brother of the above, born 1699, died 1777.—**ANTOINE LAURENT DE**, nephew of the above, born in 1748, died 1836. His work entitled *Genera Plantarum* formed the first complete exposition of the natural system of classifying plants, which has now taken the place of the artificial Linnæan system. His other chief work was *Principes de la Méthode Naturelle des Végétaux*.—**ADRIEN DE**, son of the preceding, born in 1797, died 1853. By his researches and publications he placed himself in the front rank of botanists. His best-known work was *Traité Élémentaire de Botanique*, for use in higher-class schools, which far excelled all previous works of the kind.

Juste-milieu (zhûst-mē-lyeu), a French expression signifying 'the true mean'; specifically applied to that method of administering government which consists in maintaining itself by moderation and conciliation between the extreme parties on either side.

Justice, a common term for a judge or legal official appointed to hold courts and administer justice, especially given to judges of superior courts. Thus in England the judges in the common law and chancery divisions of the High Court of Justice are so called, the head of the common law division being the lord chief-justice of England. The term is similarly used in the British colonies and the U. States. See also *Chief-justice*, and articles below.

Justice, HIGH COURT OF. See *Supreme Court*.

Justice, LORD CHIEF. See *Chief-justice*.

Justice-clerk, LORD, in Scotland, the vice-president of the Court of Justiciary, and the presiding judge of that court in absence of the lord-president of the Court of Session. He is one of the officers of state for Scotland, and one of the commissioners for keeping the Scottish regalia. He is always one of the senators of the College of Justice, and

president of the second division of the Court of Session.

Justice-general, LORD, in Scotland, the highest judge in Scotland, also called the *Lord President of the Court of Session*. Formerly the office of justice-general was a sinecure and not a judicial one; but the title is now, since 1831, associated with that of the lord president.

Justice of the Peace, a judicial magistrate intrusted with the conservation of the peace. In Britain the first judicial proceedings are held before him in regard to arresting persons accused of grave offences; and his jurisdiction extends to trial and adjudication for small offences. In case of the commission of a crime or a breach of the peace a complaint is made to one of these magistrates. If he is satisfied with the evidence of a commission of some offence, he issues a warrant directed to a constable, tries the party if the offence be within his jurisdiction, and acquits him or awards punishment. The justices meet in petty or quarter session, where offences of a trivial sort are tried by them, and the statute business of the county is administered. These duties are all performed gratuitously, and not always efficiently, and in recent years there has been an occasional outcry against 'the great unpaid.' Besides qualifications of rank, any person having an estate of £100 per annum free of charge is eligible for the office. In Scotland the duties of a justice of the peace are more limited than in England, at least in practice. A rank or property qualification is not necessary. In Canada there are everywhere justices of the peace, holding their commissions from the crown, as in Britain, and having similar duties within their respective jurisdiction. The same is the case in other British colonies. In the U. States the office is held only by special appointment, and the tenure is different in different states; but the commission is usually for three or four years, or some other specific limited period. Their position is similar to that of the justices in Britain. In some of the states they have a right to celebrate marriages.

Justices, LORDS, in Great Britain, persons formerly appointed by the sovereign to act for a time as his substitute in the supreme government, either of the whole kingdom or of a part of it. Thus when George I. went abroad in May, 1719, he intrusted the government during his absence to thirteen lords-justices; and nineteen lords-justices

and guardians were also appointed when George IV. went to Hanover in 1821. The lord-lieutenant of Ireland is a familiar example of a lord-justice.—The title *Lords-justices of Appeal* is in England given to a certain number of judges belonging to the appeal division of the Supreme Court of Judicature.

Justices in Eyre, or ITINERANT JUSTICES, in England, justices who travel about over fixed circuits dispensing justice, the judges of assize in fact. Such itinerant judges were first appointed in 1176; in Magna Charta they were required to visit each county annually.

Justiciary Court, the supreme criminal court in Scotland, consisting of the lord justice-general (who is the president), the lord justice-clerk, and five commissioners of justiciary, who are also lords of session. The judges go on circuit to three districts, viz.: Jedburgh, Dumfries, and Ayr; Glasgow, Inverary, and Stirling; and Dundee, Perth, Aberdeen, and Inverness. One lord can hold a circuit court, and there is no appeal from his judgment.

Justifiable Homicide. See *Homicide*.

Justification, a theological term employed to designate the act by which a person is accounted just or righteous in the sight of God, or placed in a state of salvation. This conception of God as a judge who absolves the sinner on account of Christ's merit and imputed righteousness, is based upon the Pauline writings, and received its most pronounced expression at or immediately after the Reformation.

Justin, JUSTINUS, the name of two emperors of the East.—JUSTIN I., born 450, died 523 A.D., a peasant of Dacia, rose from a common soldier to be commander of the imperial guard, and on the death of Anastasius in 518 became emperor. He relegated the civil administration to the quæstor Proclus, and between them the empire was governed with a fair amount of success.—JUSTIN II. ascended the throne on the death of his uncle Justinian I. in 565. Beset with enemies outside the empire and harassed with internal discord, he in 574 solved his difficulties by abdicating in favour of Tiberius, captain of the guard. He died in 578.

Justin, MARCUS JUSTINIANUS JUSTINUS, a Latin historian, who probably lived at Rome in the 2d or 3d century after Christ, although some assign him a later date. He made an epitome of the general history of

antiquity by Trogus Pompeius, a native of Gaul, who lived in the time of Augustus, and whose work is no longer extant. This epitome, although incorrect in detail, is valuable for its compressed reproduction of the old histories.

Justin'ian I., FLAVIUS ANICIUS JUSTINIANUS, surnamed the *Great*, nephew of Justin I., emperor of the East, celebrated as a lawgiver, was born of an obscure family in 483 A.D., and died in 565. Patronized by his uncle, who, from a Thracian peasant, had become emperor, he so flattered the senate and dazzled the people that he was made consul, and took the title of *Nobilissimus*. On the death of his uncle, with whom he had latterly shared the imperial power, he was proclaimed emperor, and married an actress named Theodora. During his reign the party disputes of the *Greens* and the *Blues* became so violent, that in his attempt to quell the tumults the emperor's own life was in jeopardy, and a great part of Constantinople was destroyed by fire. Aided by his generals, he was able subsequently to restore to the Roman empire a part of its former possessions, as when Belisarius in 523 and 529 defeated the Persians, and achieved victories in Africa, and when Narses, another of his generals, put an end to the Ostrogoth rule in Italy. Turning his attention to the laws, Justinian commissioned ten learned civilians to draw up a new code, and the result was the *Corpus Juris Civilis*, or *body of civil law*. He took great interest in building cities, fortifications, and churches; among the latter he rebuilt the church of St. Sophia at Constantinople. To maintain his public munificence he oppressed the people with taxes, and suffered his servants to commit the most flagrant crimes. His reign of thirty-eight years was a great period in the empire's history, but the emperor himself was by no means great.

Justin Martyr, an early Christian writer, born in Palestine about 100 A.D., suffered for his faith about 165. Born a heathen but converted to Christianity, he went to Rome, where he wrote an Apology for Christianity, with a supplementary or second Apology, a Dialogue with Trypho the Jew, all still extant, besides other works. He is of importance in the history of Christian dogma.

Jute, a textile fabric obtained from *Corchorus capsulāris*, a plant belonging to the natural order Tiliaceæ (lime or linden). The jute plant is a native of the warmer parts

of India, where its cultivation is carried on, especially in Bengal, on an extensive scale. It is an annual plant, growing to a height of 12 or 14 feet. The fibre forms the inner



Jute (*Corchorus capsularis*).

bark of the plant, and possesses in an eminent degree the tenacity common to the bark of the plants of this order. The fibre is fine, and has a shining surface; it is injured by exposure to water, and hence is not well adapted for cordage and canvas, but is in extensive use for making bags, and in the United States and Great Britain serves many useful purposes, being mixed with hemp for cordage, and with silk in the manufacture of cheap satins; its principal use is in the manufacture of coarse cloth for bagging, and in making the foundation of inferior carpets, mats, &c. In Bengal, jute has been cultivated and its fibres woven into various fabrics from a remote period, but it is only since about 1830 that its manufacture has risen to importance in Europe. The headquarters of this branch of industry are at Dundee. The rice, cotton, sugar, coffee, pepper, and other articles of East Indian commerce are almost wholly carried in gunny bags (as the jute bags are called), large quantities of which are made in and exported from Bengal itself.

Jüterbogk (yü'ter-bok), a town of Prussia, province of Brandenburg, 30 miles s.s.w. of Berlin, with manufactures of woollens, and a church in which is preserved Tetzels indulgence-box. Pop. 6797.

Jutland (Danish, *Jylland*), the peninsular and most important portion of Denmark, surrounded on three sides by the sea—the Skagerrack, the Kattegat, and the North

Sea, on the south by Schleswig; area, 9755 sq. miles. A remarkable feature is the series of inland water-basins known as the Liimfiord, extending from the North Sea to the Kattegat, and finding their chief outlet near Aalborg. The outlet towards the North Sea is sometimes sanded up altogether. The highest point of Jutland is the Himmeljberg, 550 feet above sea-level. Great part of the peninsula is sandy and barren; in the south and east are some low alluvial tracts rich in verdure. There are many lakes and small rivers. The climate on the whole is temperate, but variable. The inhabitants are considered to be the most genuine specimens of the old Danish stock, and have preserved both the language and the manners and customs of early times in their greatest purity. Its earlier inhabitants, the Jutes, took part in the expedition of the Saxons to England. Pop. 1890, 942,120. See *Denmark*.

Ju'venal—DECIMUS JUNIUS JUVENALIS—Latin satirical poet, was born probably about the year 42 A.D. at Aquinum, a Volscian town. He is said to have been the adopted child of a wealthy freedman; to have been by profession a pleader; to have been the friend of Martial; and to have died in Egypt as an exile in charge of a cohort of infantry. Nothing of this is authentic; we only know certainly that he resided in Aquinum, and flourished about the end of the 1st century after Christ. His extant works are sixteen satires, composed in hexameters, and giving in powerful language, inspired by a bitter and heartfelt indignation, a sombre picture of the corrupt Roman society of that era. His satires have also been translated by Gifford, and some of them by Dryden, while Johnson's imitations of the third and tenth (under the titles *London*, and the *Vanity of Human Wishes*) are well known.

Juvenile Offenders, a term in English law applied to young persons as distinct from adult offenders. When the crime is theft the criminal, if under the age of 16, can be sent to a house of correction for a period not exceeding three months, or fined in an amount not more than £3. In addition to imprisonment, the law provides that the offender, if a male under 14 years, can be whipped with a birch rod to the number of twelve strokes. The magistrate is also empowered to send the offender, at the end of his imprisonment, to a reformatory for a term not less than two, and not more than five years. The expense of his maintenance

is borne by the parents or guardians if their ability can be proved.

Juxon, WILLIAM, English prelate, born 1582, died 1663. After studying at St. John's College, Oxford, he became a student of Gray's Inn, with the view of qualifying for the bar, but took orders and obtained livings, first in 1609 at Oxford, and then in 1614 at Somerton. In 1621 he succeeded Laud as president of St. John's College; in

1627 was appointed vice-chancellor of the university, and about the same time chaplain in ordinary to Charles I., who gave him the deanery of Worcester, and then the bishopric of London (1633). He had the melancholy privilege of soothing the king's last moments, and ministering to him on the scaffold. His fidelity cost him his bishopric, but at the Restoration he was made Archbishop of Canterbury.

K.

K,¹ the eleventh letter of the English alphabet, representing a guttural articulation, the surd consonant corresponding to the sonant *g*. In Anglo-Saxon this letter was only used occasionally, *c* being regularly used instead. So also in Latin, *k*, borrowed from the Greeks, was little used, its place being supplied by *c*. The Italians, Spaniards, and Portuguese have banished the letter entirely from their alphabet. The French use it only in a few words derived from the Greek, foreign proper names, &c. At the beginning of a word or syllable *k* is not pronounced when followed by *n*. as *knife*, *knee*, *know*.

Kaaba (kā'ā-bā), or CAABA, the sacred shrine at Mecca to which Moslems make their pilgrimages. It is a flat-roofed quadrangular structure about 40 feet high, 55 feet long, and 45 broad, and stands in the centre of the mosque or sacred area, which is inclosed by walls and colonnades. At the south-east corner of the Kaaba, built into the wall, is the famous 'black-stone' or *Kebelah*, the point to which every pious Moslem directs his face in prayer, and which is devoutly kissed by the pilgrim. According to Mussulman tradition, this was originally of a dazzling white, and was brought from heaven by Gabriel to Abraham when he was erecting the Kaaba. Round the Kaaba are various sacred buildings, and near it the Zem-Zem or holy well.

Kaaden (kā'den), a town in the north-west of Bohemia, on the Eger. Pop. 6332.

Kaama (kā'ma). See *Hartebeest*.

Kaap Gold-fields, a district in the Transvaal, intersected by the Kaap River, a tributary of the Crocodile, containing the mining town of Barberton and other settlements.

Kab'bala. See *Cabala*.

¹ Where the reader may fail to find articles under *K*, he is referred to *C*.

Kabinda. See *Cabinda*.

Kabul. See *Cabul*.

Kabyles. See *Berbers*.

Kad'apa. Same as *Cuddapah*.

Kadi. See *Cadi*.

Kadiak, an island south of Alaska, and like it belonging to the U. States. The inhabitants, below 3000 in number, resemble the Eskimos, and live by hunting and fishing, a considerable fur trade being done.

Kadom, an ancient town of Russia, gov. of Tamboff, on the river Moksha. Pop. about 7500.

Kämpfer (kāmp'fēr), ENGELBRECHT, a German traveller and physician, born 1651, died 1716. As secretary to a Swedish embassy, and afterwards as surgeon in the service of the Dutch East India Company, he travelled extensively in the East. His comprehensive work on Japan, translated from his manuscripts into English in 1727, was, for a very long period, the only reliable source of information about that country.

Kaf. See *Caf*.

Kaffa, a mountainous territory to the south of Abyssinia, inhabited by one of the Galla tribes. It is supposed to be the home of the coffee-plant, which grows wild on the slopes of the Kaffa hills. The chief town is Bonga.

Kaffa. See *Feodosia*.

Kaffir-bread, a kind of sago obtained from the stems of one or two plants of the Cycas family, natives of S. Africa.

Kaffir Corn (*Sorghum vulgäre*), a variety of millet cultivated in some parts of Africa.

Kaffir Ox, the Cape buffalo. See *Buffalo*.

Kaffirs, KAFFRES, or CAFFRES (from Arabic *Kafir*, infidel or unbeliever), the principal race inhabiting South-eastern Africa, a branch of the great Bantu family. The name is now chiefly restricted to the tribes occupying the coast districts between Cape

Colony and Delagoa Bay. They differ from the negroes in the shape of the head, it being more like that of Europeans; in the high nose, frizzled hair, and brown complexion, which becomes lighter in shade in the tribes of the more southern districts. They are a tall, muscular race, the average height being from 5 ft. 9 in. to 5 ft. 11 in., and frugal and simple in their habits. Their chief occupation is raising and tending cattle, and hunting; garden and field work is mainly



Kaffir Chief of the Zulu tribe.

performed by women. They are of a peaceful disposition, but in times of war they display considerable bravery, tactical skill, and dexterity in the handling of their assagais or spears, shields, and clubs, as has been shown in their engagements with the British forces. There are several distinct branches or families of Kaffirs; but the tribes which recent events have specially brought to the front are the Pondos, the Fingoes, the Zulus, and the Swazi. Kaffirs, especially of the Zulu tribe, are distributed in large numbers over Natal and Cape Colony, and have become to some extent civilized. Frequent hostilities have taken place between the British and one or other of the Kaffir tribes, beginning almost with the first acquisition by Britain of the Cape Colony. The first Kaffir war was in 1811-12, the next in 1818-19. In 1834-35 a serious Kaffir war was carried on, resulting in the expulsion of

the Kaffirs beyond the Great Kei, but they were soon allowed to return. Another war (the fourth) broke out in 1846, and lasted nearly two years, with much suffering to both colonists and Kaffirs. Its result was an extension of territory in the north and east, a portion between the Cape Colony and the Kei being reserved for the natives, and called British Kaffraria. In 1850 a Kaffir outbreak took place, and a bloody war followed, ending in 1853, soon after which British Kaffraria was made a crown colony. A sixth war occurred in 1877-78, owing its origin to disputes between the two tribes of the Fingoes and Gcalekas. For a subsequent war see *Zululand*.

Kaffra'ria, literally the country of the Kaffirs, a name once applied to a large part of South-eastern Africa, but now limited to the coast district stretching from the Cape Colony to Natal, recently brought under British control. A tract of land south-west of the Kei used to be known as British Kaffraria, but since 1865 it has formed two districts of Cape Colony, namely, King William's Town and East London. See *Kaffirs*.

Kafiristan', or the country of Kafirs (infidels), a tract north-east of Afghanistan, between India and the Hindu-Kush. It is very mountainous, especially the interior, and inhabited by a nation (the Siaposh) formed of different tribes, varying considerably in complexion. They live chiefly by cattle-raising and agriculture. Although hemmed in by Moslems, they have, excepting a few border tribes, resisted the spread of Islamism. Polygamy is practised, and they dress themselves in goat-skins, or fabrics woven from goats' hair, black being the almost universal colour.

Kaf'tan, or **CAFTAN**, a long vest or gown worn under a long cloth coat in Turkey, Egypt, Persia, and other Eastern countries, tied round the waist with a girdle, and having long sleeves. Formerly the Sultan presented state dignitaries and foreign ambassadors with a caftan as a mark of honour.

Kagoshi'ma, a town in Japan, at the southern end of the island of Kiushiu, on the Kagoshima Gulf. It was bombarded by a British squadron in 1863, and set on fire as a punishment for the murder of some British subjects. Pop. 1891, 56,643.

Kahau. See *Proboscis Monkey*.

Kaieteur, a waterfall in British Guiana, on the Potaro river, 822 feet high.

Kail. See *Cabbage*.

Kailas (kī-lās'), a sacred mountain of the Hindus in the Himalayas, near the sources of the Indus and Sutlej; height, 20,226 ft.

Kaimacam (kī-mā-kām'), a Turkish title derived from the Arabic, signifying 'substitute,' and given to the officials who are at the head of the districts called livas, being sub-divisions of the vilayets. The lieutenants of the grand-vizier are also thus called.

Kainite, a hydrous sulphate of potash and magnesia, found along with beds of rock-salt, especially in Germany and Austria. It is valuable for the production of double sulphate of potash and magnesia, and is used as a manure.

Kainozo'ic. See *Cainozoic*.

Kaira (kī'ra), a town and district of India, Bombay Presidency. The town is an ancient place with a handsome court-house, government schools, &c. Pop. 12,681. The district has an area of 1561 sq. miles and a pop. of 782,733.

Kairwan (kīr-wān'), a town of Tunis, 80 miles S.S.E. of the capital, in a barren sandy plain, and surrounded by a wall. It ranks second only to Tunis in trade and population, and is one of the holy Mohammedan towns, being formerly almost inaccessible to Christians. Under French rule it has been connected with Tunis by a good road and partly by tramway, and a new water-supply has been introduced. Kairwan was the first seat of Saracenic empire in Barbary, and relics of its ancient grandeur still abound. Pop. 20,000.

Kaisariah (kī-sār-ē'yā), or KAISARIYEH, a town in the interior of Asia Minor, vilayet of Angora, south of the Kizil-Irmak, anciently called *Cæsarea*. Pop. 40,000. See also *Cæsarea*.

Kaisar-i-Hind, Hindustani for Empress of India, the title conferred on Queen Victoria in 1876 by act of parliament, and proclamation at Delhi.

Kaiser (kī'zér), the German word for emperor, from L. *Cæsar*.

Kaiserslautern (kī'zérz-lou-térn), a town in the Bavarian Palatinate, on the Lauter. It has manufactures of woollens, cottons, hosiery, stoneware, and leather; breweries, glass-works, paper and other mills, and important iron-works. Pop. 31,449.

Kaiser - Wilhelms - Land. See *New Guinea*.

Kaithal (kit-hal'), an ancient town of India, Punjab, Karnal dist., with manufac-

tures of lac ornaments and toys, and salt-petre refineries. Pop. 14,754.

Kaka (*Nestor meridionalis*), a New Zealand parrot, or rather cockatoo, which, from feeding on fruits, vegetables, &c., has largely betaken itself to a flesh diet, and has become a nuisance by settling on the backs of sheep, and with its strong curved bill tearing out portions of their flesh.

Kak'apo. See *Owl Parrot*.

Kake'monos, Japanese name for paintings on paper or silk, having a rod at bottom like a map, and hung similarly on a wall.

Kak'odyle, or CACODYLE, a compound of hydrocarbon and arsenic, a clear liquid heavier than water, with an insupportably offensive smell and poisonous vapour. Its vapour when mixed with air explodes if heated above 50° C. See *Alkarsine*.

Kalabagh (kā-la-bāg'), a town of India, in the Punjab, on the Indus, close to hills and cliffs of solid rock-salt, which is extensively quarried. Pop. 6056.

Kaladgi (ka-lād'gi), a town of India in the south of Bombay Presidency. Pop. 7024.

Kalafat', a town in Roumania, on the left bank of the Danube, about 1 mile east of Widdin, on the opposite bank. During the Russo-Turkish war of 1853-54 it was twice unsuccessfully attacked by the Russians. Since Roumania has become an independent kingdom it has made rapid progress. Pop. 12,600.

Kalaha'ri, or KALIHA'RI, a desert region in Central South Africa, north of the Orange River, a large tract of which is included in the British protectorate of Bechuanaland. It is very flat, subject to long-continued droughts, and has only dried-up river beds; nevertheless, it is not devoid of vegetation, patches of grass and shrubs occurring here and there. An abundant supply of water-melons and some remarkable varieties of tubers, together with large herds of antelopes and other game, provide ample subsistence to the bushmen and Bakalahari inhabiting this barren region.

Kalahas'ti, a town of India, Madras Presidency, North Arcot district, with a temple of Siva, which is a place of pilgrimage. Pop. 9935.

Kalama'ta, a seaport of Greece, in the Morea, capital of the government of Mesenia, at the head of the Gulf of Koron. It is the seat of an archbishop, and has an export trade in wool, oil, silk, and figs. Pop. 7609.

Kalamazoo', a town, county, and river of Michigan, United States. Kalamazoo city is 144 miles E.N.E. of Chicago, situated in a fertile agricultural district, on the river of the same name, which supplies some of its numerous factories with water power; chief manufactures: paper, flour, furniture, and agricultural implements. Pop. 17,853.

Kalbe (kál'bé), a town of Prussia, 15 miles south of Magdeburg on the Saale. It has manufactures of woollens, paper, chicory, oil, and beet-root sugar. Pop. 8850.

Kale. See *Cabbage*.

Kaleidoscope (ka-lí'-), a well-known optical toy invented by Sir David Brewster, by which an infinite variety of symmetrical, and often beautiful, coloured designs is obtained. The ordinary kaleidoscope consists of a tube containing two glass plates acting as mirrors, which extend along its whole length and make an angle of 60° with one another. One end of the tube is closed by a metal plate with a small hole at its centre, to which the eye is applied; at the other end there are two plates, one of ground the other of clear glass (the latter being next the eye), with a number of pieces of coloured glass or beads lying loosely between them. When the eye is applied to the aperture the mirrors produce a beautiful symmetrical figure, and when the tube is turned about or shaken new images, always symmetrical, are formed. This arrangement may be modified in various ways. The instrument has been used by designers of patterns for printed calicoes, &c.

Kalendar. See *Calendar*.

Kalgan, a fortified town of China, province Chi-li, on the overland trade route between China and Russia. Caravans pass regularly through, conveying tea from Pekin to Kiachta, and considerable quantities of Russian goods follow an opposite course. It produces considerable quantities of soda. Population estimated at 100,000.

Kali, a Hindu goddess, one of the forms of the consort of Siva, and therefore in some respects corresponding to Durga and other deities. She is represented as black, with four arms, wearing a necklace of skulls, and the hands of slaughtered giants round her waist as a girdle. Her eyebrows and breast appear streaming with the blood of monsters she has slain and devoured. One hand holds a sword, another a human head. She is the goddess of death and destruction, and goats and other animals are sacrificed on her altars. Ancient

Hindu books even enjoined human sacrifices to this bloodthirsty goddess. Her worship is said to be characterized by vile secret rites.

Kali, a plant, a species of *Salsöla*, or glasswort, the ashes of which may be used in making glass.

Kâlidâ'sa, one of the greatest Indian poets and dramatic writers, who lived, according to tradition, in the 1st century B.C., but some authorities assert that he flourished several centuries after the Christian era. His best production is the drama *Sâkuntala*, which was first translated into English by Sir W. Jones (Calcutta, 1789), and at once aroused in Europe attention to Sanskrit literature. He was also the author of two other plays—*Vikramorvaçi* (The Hero and the Nymph), and *Mâlavikâ* and *Agnimitrâ*, while two epics and other works are ascribed to him, some of which have also been made accessible to the general public by translations.

Kalif. See *Caliph*.

Kalihari. See *Kalahari*.

Kalinjar, a village and hill fort of India, N.W. Provinces, Banda district, a place of great antiquity and sanctity, with tanks, caves, temples, tombs, statues, &c.

Kalisch (kâ'lish), or **KALISZ**, a town and province in Russian Poland, near the Prussian frontier. Area of province 4392 sq. miles, pop. 774,759. The town is of great antiquity, being founded in 655, and was for a long period the residence of the grand-dukes of Poland, whose palace still exists. It is an important trade centre, and the capital of the province. Pop. 18,804.

Ka'lium, another name for potassium, whence its symbol K is derived.

Kalmar. See *Calmar*.

Kal'mia, a beautiful North American genus of shrubs, with cup-shaped rose or purple flowers disposed in corymbs, and belonging to the natural order Ericaceæ, or heaths. The *K. latifolia*, commonly called *mountain laurel* or *calico bush*, much valued in European gardens for its flowers and foliage, has its home in the Alleghany Mountains. Its trunk sometimes attains a diameter of 3 inches; the wood is very hard, closely resembling box.

Kal'mucks, a nomadic and warlike Mongol race, originally natives of the territory of Central Asia between the Koko-Nor and Tibet, but now inhabiting not only parts of the Chinese empire, but also occupying districts of Siberia and European Russia,

where they settled under Russian dominion on the Ural, Don, and Volga, and in the



Kalmuck.

government of Simbirsk. They have been great warriors from very early times, fought many bloody battles with the Tartars, with the Chinese, and among themselves, and made predatory expeditions as far west as Asia Minor, and as early as the 11th century. Many of the Russian Kalmucks have been converted to Christianity. They are intrepid soldiers, splendid horsemen, and troops of them are attached to almost every Cossack regiment. Physically the Kalmucks are small of stature, broad-shouldered, with small round heads, and the narrow oblique eyes characteristic of the Mongolian race. They number altogether perhaps 700,000, of whom more than half are under Chinese rule.

Kalocza (kā-lot'shà), a town of Hungary, 67 miles south of Budapest, near the Danube; a R. Catholic archbishopric with fine cathedral and episcopal palace. Pop. 15,789.

Kalong. See *Fox-bat*.

Kalpi. See *Calpee*.

Kalu'ga, a town and government of European Russia. The gov. is bounded by those of Moscow, Smolensk, Tula, and Orel, has an area, mostly flat and sandy, of 11,942 sq. miles and a pop. of 1,187,433: The central parts are covered with immense pine and fir forests, the rest is poorly cultivated, producing chiefly grain, hemp, and flax. Iron ore and a poor kind of coal are also raised. The town stands on an elevation on the right bank of the Oka, a navigable river, 114 miles s.w. of Moscow, has rope and canvas factories, and trades largely with Germany in leather, oil, and candles. Pop. 40,252.

Kalusz (kā'lush), a town of Austria, in Galicia, 60 miles south-east of Lemberg, with natural deposits of potassium salts. Pop. 7210.

Kama, the largest tributary of the Volga, rises in the Russian government Viatka, and after a course of 1150 miles flows into the Volga, 40 miles south of Kasan. Part of it is navigable for steamers, and ordinary barges can proceed as far as Perm.

Kama (kā'ma), the Hindu god of love, corresponding, generally speaking, to the Greek Eros and Roman Cupid. He appears as a beautiful youth riding on a parrot, generally carrying a bow with a string formed of bees, and having five arrows, each tipped with a flower that is supposed to have some amorous influence. Dancing girls or nymphs bear him company, and one carries his banner, the emblem on which is a fish or marine monster on a red ground.



Kama or Kamadeva.

Kam'ala, a drug long known, under various names, to Indian and Arab physicians, as a specific against the tape-worm, introduced in the British Pharmacopoeia in 1864 as a vermifuge, in doses of 30 grains to a quarter of an ounce in syrup or gruel. It occurs as a brick-red powder, adherent to the fruit of the *Rottlera tinctoria*, formed by minute roundish, semi-transparent granules, mixed with stellate hairs, and is largely collected in the forests of Madras, where it forms an important source of revenue. The active principle of the powder lies in the 80 per cent of resin it contains, which also supply the colouring matter, called *rottlerin*, used as a silk dye. Another variety, ex-

clusively employed as a dye, comes from the east coast of Africa, but differs from the Indian product in the deep purple colour, the coarseness of its particles, and the large simple hairs which are found mixed with it.

Kama'on. See *Kumaon*.

Kamenetz', a fortified town of Russia, capital of the government of Podolsk, on the Smotritz. Pop. 35,840.

Kames, LORD. See *Home, Henry*.

Kampen, a town of Holland, on the Yssel, near where it enters the Zuider-Zee. It has two interesting churches and a town-hall. It was one of the towns belonging to the Hanseatic League, and still has a good trade in dairy produce, &c. Pop. 16,454.

Kämpfer. See *Kampfer*.

Kamptee (käm-tē), or **KAMTHI**, a town of India, Central Provinces, Nagpur district, with an extensive military cantonment, a fine bridge over the Kanhán river, a Protestant and a R. Catholic church, and a large trade. Pop. 50,987.

Kamptu'licon, a floor-covering, first introduced to the general public in 1862. The best is made of india-rubber, gutta-percha, and powdered cork. The first two ingredients are liquefied by naphtha or other solvent, the cork-dust is then introduced, and the mixture, while still warm, flattened out by rollers into sheets of the desired length, width, and thickness. When hardened, patterns are printed on. It has the advantage of softness and warmth over ordinary oil-cloth, and is the best substitute for a carpet; but the cost of the materials used makes it expensive, and the cheaper linoleum has now largely superseded it.

Kamrup (käm-röp'), a district of Assam, in the Brahmaputra valley; area, 3857 sq. miles. Pop. 644,960.

Kamsin, a name in Egypt for the simoom.

Kamtchat'ka, a large peninsula in the north-east of Asia. On the east it has the North Pacific Ocean, and on the west the Sea of Okhotsk; it is upwards of 800 miles in length and 190 in average breadth; sq. miles, 85,000. It is a Russian possession since 1706. A lofty mountain range extends the whole length of the peninsula. Some of the mountains are active volcanoes, and eruptions are of frequent occurrence. A number of hot springs also exist. The climate is very severe. Excepting in the valley of the Kamtchatka River, the most fertile and populous settlement, the soil is but ill adapted for cultivation. The chief wealth of the country lies in its fur-producing

animals, including the sable, the Arctic fox, the beaver, and the bear. Game and fish of all kinds abound, and form the staple food of the inhabitants. The Kamtchadales, once the predominant race of the peninsula, are a branch of the Mongol family, a low type physically and morally; but they are rapidly vanishing before the Russian settlers. In 1886 they were stated to be under 2000. Their food consists mainly of fish seasoned with whale and seal fat. They believe in a creator and the immortality of the soul (including animals). They use dogs for draught purposes, and not the reindeer, like their neighbours. The Koryaks are a wandering tribe, living in the northern districts, and subsisting almost exclusively on the produce of the reindeer. The entire population is about 11,500. The capital, Petropaulovsk, has a pop. of about 1000.

Kam'yshin, a town of European Russia, at the juncture of the Kamyshinka and the Volga, in the government and 106 miles s.s.w. of Saratov. It was founded by Peter the Great in 1710. Pop. 17,410.

Kanaga'wa, a seaport of Japan, in the island of Hondo, or Nippon, on an inlet of the Bay of Yedo, forming one place of trade with the adjacent Yokohama, open to British trade since 1859. Pop. 10,000. See *Yokohama*.

Kana'kas, the native inhabitants of the Sandwich Islands; in New Caledonia and the New Hebrides the name is applied to all the native labourers, without distinction of origin.

Kan'ara. See *Canara*.

Kana'ri-oil, an oil yielded by the fruits of *Canarium commune*, a tree of the Indian Archipelago and South-eastern Asia, often called Java almond. The oil is used for culinary purposes and for burning, and is deemed superior to cocoa-nut oil. See *Canarium*.

Kana'ris, CONSTANTINE, a Greek sailor, born in the island of Ipsara about 1790, and who became famous in Europe in 1822 for his daring exploits in firing the Turkish fleets in the Chios and Tenedos Straits. In 1825 he unsuccessfully attempted the destruction of the Turkish fleet in the port of Alexandria, ready to carry Arab troops to Morea. On his return to Greece in 1828, the president, Capodistrias, gave him the command of a fortress, and later on that of a squadron: a trust which he amply justified by loyal service at a most critical period. King

Otho raised him successively to the rank of captain of the first class, admiral, and senator. He was minister of marine in 1846, 1848-49, and 1854-55. In 1862 he took an active part in the overthrow of the government of Otho.

Kanas'ter. See *Canaster*.

Kanauj. See *Canoje*.

Kanaza'wa, a town of Japan, near the north-west coast of the island of Hondo (Nippon), with manufactures of silks, porcelain, &c. Pop. 1891, 96,666.

Kanchil, the chevrotain (which see).

Kandahar', or CANDAHAR, a town of considerable commercial and strategical importance in the south of Afghanistan, on the direct route to India. It was held by British forces in 1839-42, and 1879-81, and the fortifications have recently been much strengthened. The town lies 3484 feet above the sea, has a large transit trade, and a pop. of 60,000.

Kanda'vu, the southernmost island of the Fiji group. It has a fine natural harbour,



Kangaroo.

with a port of call for steamers, and is surrounded by a number of small islands, called the Kandavu group.

Kandesh. See *Khandesh*.

Kandy. See *Candy*.

Kane, ELISHA KENT, a surgeon, traveller, and Arctic explorer, born at Philadelphia 1820, died at Havana 1857. He graduated as M.D. at the University of Pennsylvania in 1842, was attached as surgeon to the American mission to China, and afterwards visited India, Egypt, and Greece. In 1846 he rendered important service as a volunteer in the United States army in Mexico, in 1850 by his survey of the Gulf of Mexico, and in the same year joined the Grinnell Expedition, as medical and scientific member, in the unsuccessful search for Sir John Franklin. His observations led him to the belief that there was a large open sea near the pole, and with a view to penetrate it he organized and commanded a second expedition, which left New York in the

Advance in May, 1853. He succeeded in getting as far as 78° 43' N. lat., where he was frozen up for twenty-one months, and being harassed by scurvy and want of provisions was obliged to abandon the vessel. A perilous journey of 1300 miles in boats and sledges brought him back to Greenland, and he again reached New York in November, 1855. Much broken in health, he sailed for Cuba to recruit, but died there. The accounts of his two expeditions added much to our knowledge of the Arctic regions.

Kanea. See *Canea*.

Ka'nem, a district of Central Africa, north and north-east of Lake Tchad, now belonging to Bornu, but formerly an independent state.

Kangaroo, the common name of a number of animals belonging to the marsupial order of mammals, indigenous to Australia, and first made known to Europe by Captain Cook. The most noticeable feature about the kangaroo is the disproportion between

the upper and lower parts of the body. The head is small, deer-like in shape, with large ears; the forelegs small and five-toed; the hindlegs very large and powerful, with four toes only on the feet. The tail is long, thick at the base, and helps to support the animal when sitting erect, the usual posture when not feeding; it also assists the hindlegs in their long leaps (from 10 to 15 feet). The young are born very immature, and protected and nourished for about eight months in the *marsupium*, or pouch, into which the nipples of the mammary glands open. Kangaroos are herbivorous, and, where still plentiful, a serious pest to squatters, whose rifles have, however, considerably reduced their number. The hindquarters of the large species supply a tolerable substitute for venison, while their tails make excellent soup, and their skins good rugs and leather. The kangaroo includes many species, varying in size from a hare to a large sheep, and remains of still larger and extinct species have been found in the pleistocene deposits of Australia. The larger and most common kinds belong to the genus *Macrōpus*, and include the giant kangaroo (*M. giganteus*), the red kangaroo (*M. rufus*), the brush kangaroo (*M. fruticus*). The tree kangaroos of New Guinea belong to the genus *Dendrogālus*; they have prehensile tails. The rock kangaroos of Northern Australia belong to the genus *Petrogāle*.

Kangaroo Apple (*Solanum laciniātum*), a plant of the potato genus, belonging to Australasia and South America, with an edible fruit.

Kangaroo Grass (*Anthistiria australis*), a tall and valuable fodder-grass of Australia, much liked by cattle.

Kangaroo Island, a long and barren island, area 1671 sq. miles, situated at the entrance to the St. Vincent Gulf, South Australia, 103 miles from Adelaide.

Kangaroo Rat (*Hypsiprymnus*), or more properly rat-kangaroo, a diminutive species of the kangaroo family, differing from the kangaroo proper in possessing canine teeth in the upper jaw, in their nocturnal habits, and their food, which chiefly consists of roots.

Kangra, a large district of Hindustan, in the Punjab, belonging mainly to the Himalayan chain; area, 9069 sq. miles. About a ninth is under cultivation, and large tracts are covered with forests. The inhabitants are a good-looking, fair-complexioned race, mild and peaceable, and

much attached to their country. Pop. 730,845. There are no towns of any size.

Kanizsa (kā'n'i-shā), market town of Hungary, district Zala, with large distilleries, and fairs for grain, &c. Pop. 18,393.

Kankakee, Kankakee co., Ill., has manufacturing of socks, woollens, buttons, leather, paper, &c. Pop. 1890, 9025.

Kano, a town in Central Africa, kingdom of Sokoto. Pop. estimated at 30,000.

Kanoje (kā-nōj'), or KANAUI, a town of Hindustan, N.W. Provinces, on a plain near the Ganges. It was once the capital of a great empire, but now consists chiefly of ruins which extend over several miles, though there is also a modern town with some manufactures. Pop. 16,646.

Kan'sas, one of the United States, bounded north by Nebraska, east by Missouri, south by the Indian Territory, west by Colorado; area, 82,080 sq. miles. It consists chiefly of undulating plains, well watered by the Kansas and Arkansas and other rivers, the Missouri forming the boundary on the north-east. The soil is generally fertile, highly suitable for grain, vegetables, and fruit, and cattle-raising is carried on very extensively. The climate is mild, and the winter short, but violent winds and sudden changes of temperature often mar the spring season. Although an agricultural state, Kansas has important and varied manufactures, the rivers supplying the motive power in many places. Bituminous coal, iron ore, lime, marble, lead, salt, &c., are among the minerals, and 2,230,763 tons of coal were mined in 1889. Education is well provided for, and there is a State university, an agricultural college, and other colleges and normal schools. It has over 8400 miles of railroad. A law prohibiting the manufacture and importation of intoxicating liquors is in force, and generally observed. The chief towns are Leavenworth, Lawrence, Topeka, and Atchison; Topeka being the state capital. Kansas originally belonged to the Louisiana territory. Settlers had entered it in considerable numbers by 1853, and in 1861 it was admitted one of the States of the Union. Pop. 1890, 1,427,096.

Kansas City, a town of the United States, Missouri, on the frontier of Kansas, and right bank of the Missouri, in the midst of a rich agricultural region, and forming a centre in which thirteen railroads meet, thus making it a great commercial emporium. As a live-stock market it is prob-

ably the second in the States, and it is also a great beef and pork packing centre (this production in 1887 amounting in value to \$50,000,000), its grain trade also being large. Its manufactures are of less importance. Pop. 1890, 119,668.

Kansas City, Wyandotte co., Kansas, has increased rapidly. Pop. 1890, 38,316.

Kansas River, a river of Kansas, formed by the junction of the Solomon and Smoky Hill (the latter rising in the Rocky Mountains), traverses the state in an easterly direction, and falls into the Missouri near Kansas City.

Kansoo', or KANSU, an inland province in the north of China; area, 86,608 sq. miles. It is mountainous, some of the peaks rising more than 10,000 feet above sea-level, and is watered by the Yellow River, but has few fertile tracts. The climate is cold, but wheat, barley, and millet grow, and large flocks and herds are maintained. Lan-choo-foo is the capital. Pop. 5,411,188.

Kant, IMMANUEL, a celebrated German philosopher, the founder of the 'critical' or Kantian philosophy, born at Königsberg, Prussia, 1724, died at the same place 1804. His first education, which was of a strictly religious character, he received under the paternal roof, his father, whose family is believed to have been of Scottish origin, being a saddler of limited means. He early showed great application to study, and was sent to the Collegium Fredericianum, and then (in 1740) to the university of his native city. His progress at college and at the university was rapid and brilliant, his studies embracing in particular mathematics and physics, as well as philosophy. Leaving the university after three years, he engaged in tuition, and it was not till 1755 that he took his degree. Soon after this he was appointed one of the teachers in the Königsberg University, and lectured on logic, metaphysics, mathematics, and natural philosophy, to which, at subsequent periods, he added natural law, moral philosophy, natural theology, and physical geography. In 1770 he became a full professor, obtaining the chair of logic and metaphysics, a post that he occupied till 1797. It is impossible within our space to give anything like an exposition of the philosophy of Kant, which has profoundly influenced all subsequent philosophical speculations. Dissatisfied with the dogmatism of Wolff and the scepticism of Hume, he set himself to investigate the field of metaphysics for himself, and in the first place

proceeded to the examination of the origin, extent, and limits of human knowledge. According to him, part of our knowledge is knowledge *a priori*, or original, transcendental, and independent of experience;



Immanuel Kant.

part of it is *a posteriori*, or based on experience. What he calls the 'pure reason' has to do with the former. His great work named the *Kritik der reinen Vernunft*—Critique of Pure Reason (first edition, Riga, 1781), contains the foundation for his whole system of philosophy. In the preface to a later work, the *Kritik der Urtheilskraft*—Critique of the Power of Judgment (Berlin, 1790), he defines 'pure reason' thus: Pure reason is the faculty to understand by *a priori* principles; and the discussion of the possibility of these principles, and the delimitation of this faculty, constitutes the critique of pure reason. In the first rank of such ideas as we do not derive from experience are *space* and *time*. Kant shows that all our perceptions are submitted to these two forms, hence he concludes that they are within us, and not in the objects; they are *necessary* and *pure intuitions* of the internal sense. The three original faculties, through the medium of which we acquire knowledge, are *sense*, *understanding*, *reason*. Sense, a passive and receptive faculty, has, as already stated, for its forms or conditions *space* and *time*. Understanding is an active or spontaneous faculty, and consists in the power of forming conceptions according to such categories as unity, plurality, causality, &c., which categories are applied to objects of experience through the medium of the two forms of perception, *space* and *time*. Reason is the third or highest degree of mental spontaneity, and consists in the power of forming ideas. As it is the province of the

understanding to form the intuitions of sense into conceptions, so it is the business of reason to form conceptions into ideas. Far from rejecting experience, Kant considers the work of all our life but the action of our innate faculties on the conceptions which come to us from without. He proceeds in a similar way with morality; the idea of good and bad is a necessary condition, an original basis of morals, which is supposed in every one of our moral reflections, and not obtained by experience. He treats this part of his philosophy in his *Kritik der praktischen Vernunft*—Critique of Practical Reason (1788).

Kanu'ri, or KANO'RI, a Soudanese people, who form the principal portion of the population of Bornou.

Ka'olin, a name first given by the Chinese to a pure white clay used by them in the manufacture of porcelain. Kaolin is the result of the decomposition of granitic rock, containing felspar, mica, and quartz. Similar clays, differing slightly in colour and in the percentage of constituents, are found at Schneeberg in Saxony, furnishing the material of Dresden china; at Limoges, in France, employed for Limoges ware; and at St. Austell, in Cornwall, the source of supply for the British potteries. It is also found in Nebraska and some of the eastern states of America. In its natural state kaolin somewhat resembles mortar; by sorting and repeated filtration it is freed from all coarse ingredients, then dried in pans and sheds, and sent into the market cut into blocks.

Kapun'da, a town in South Australia, 49 miles N. of Adelaide, famous for its copper mines. There are also quarries of fine marble. Pop. 5187.

Kapurthala (ka-pört'ha-la), native state of India, province Punjab, between the Beas and the Sutlej rivers; area 598 square miles, pop. 212,721. The capital, Kapurthala, lies 65 miles east of Lahore, and 8 miles from the left bank of the Beas. Pop. 15,237.

Karachi (ka-rä'chē). See *Kurrachee*.

Ka'raites, a Jewish sect, founded about the middle of the 8th century by Anan Ben David, and which was for a long time the object of persecution by the orthodox Jews. They refuse to accept as divine or authoritative the traditions and doctrines of the Talmud, or those in the rabbinical writings, and adhere closely to the text and letter of the Old Testament. The sect never became very important, although thinly spread over

many eastern countries. They are still found in Poland, Galicia, Alexandria, and Constantinople; but their chief force is in the Crimea, where some thousands are said to exist.

Karako'rum, a name sometimes given to the mountain range in Central Asia forming a sort of rampart between Cashmere and Eastern Turkestan, and forming the watershed between the Indus basin and that of the Tarim. The name is also given to a pass in this range, 18,000 feet above sea-level, on the direct road from India to Eastern Turkestan.

Kar'aman, a town of Asiatic Turkey, in the pashalic of Karamania, in a valley of the Taurus chain, formerly the residence of the pasha. Pop. 7500.

Karama'nia, or CARAMANIA, a vilayet of Asiatic Turkey, in Asia Minor. It is traversed from east to west by the Taurus range, covered with oak and pine forests, and watered by the Kizil-Irmak, the Syhoun, and other lesser rivers. The climate is genial, the soil rich, producing abundant harvests, and the vine and the fig grow in profusion. The chief occupation of the inhabitants, mostly Turkish, is the rearing of live stock. The capital is Konieh.

Karam'sin, NICOLAI MICHAÏLOVITCH, imperial Russian historiographer, born in a village of the government of Orenburg in 1765, died at St. Petersburg 1826. He received a desultory education at a private school in Moscow, but made up the deficiency by extensive reading and continental travel. In 1792 he founded the *Moscow Journal*, and in subsequent years several literary periodicals. He did much to purify his native language, and gave a fresh impetus to Russian literature. His title to fame rests on his *History of the Russian Empire* (12 vols., St. Petersburg, 1816-24), a work written in fine style, with impartiality and penetration, and translated into several other languages, including an English edition.

Kara-Su-Bazar', a Russian town in the Crimea, formerly a very important market, but its commerce is declining. Pop. 14,397.

Karatchef', a town of Russia, government of Orel. Pop. 13,143.

Karauli', a town of India, in Rajputána, capital of native state of same name, surrounded by walls and a moat, and containing a palace, handsome temples, &c. Pop. 25,607.—The state, which is under the superintendence of the Bhurtpore and Ka-

KARENS—KARTIKEYA.

rauli Agency, has an area of 1208 sq. miles, and a population of 148,670.

Ka'rens, a pagan tribe of Burmah, formerly confined to a region beyond the Salween River, called Karen-ni, on the borders of Burmah and Siam, but now distributed over various parts of Burmah. They are an intelligent and industrious race, many of them having become Christianized, chiefly through the agency of American missionaries. They are estimated at about 100,000, but the Karen dialect is stated to be spoken by six times that number.

Karikal', or **CARICAL**, a small French settlement in India, in the Carnatic, on the Coromandel coast, 150 miles s. of Madras. Area, 62 sq. miles; pop. 92,516.—**KARIKAL**, the capital, on the Caverry delta, has a pop. of 21,315, and a large export trade, chiefly in rice.

Karli', a celebrated Buddhist cave-temple of India, Poonah district of Bombay presidency. It is rich in sculpture, and is divided like a church into nave and aisles, with an apse.

Karlsbad, **Karlsruhe**, **Karlstadt**, &c. See *Carlsbad*, &c.

Karma'thians, once a powerful Mohammedan sect, founded in Irak by Hamdan Karmat during the 9th century, who adopted the doctrines of the Ismailis, and introduced communism among his rapidly increasing flock. Missionaries were trained to spread his creed, and one of them, Abu Saïd, gained a strong hold on the people of the Persian Gulf. The caliph, afraid of the influence of the new sect, sent an army for its suppression, but he was defeated, and Abu Saïd took possession of the whole country. His son Abu Tahir, who succeeded him, made further conquests, and became master of almost all Arabia, Syria, and Irak; but under his successors this power rapidly declined, and was finally broken towards the end of the 10th century.

Karnak. See *Thebes*.

Karnal (*kar-näl'*), an Indian town and district, in the Punjab; area of district, 2396 sq. miles; pop. 622,621.—**KARNAL**, the head-quarters of the district, trades largely with Delhi and Umballa. Pop. 27,022.

Karnul', or **KARNOOL'**, a town in India, in the presidency of Madras, situated in the fork formed by the junction of the Hundri with the Tungabhadra, with a dismantled fort. Pop. 20,329.—The district has an area of 7788 sq. miles; a pop. of 709,305.

Karr, **JEAN BAPTISTE ALPHONSE**, a French journalist and romance writer, born 1808, and educated at the College Bourbon, Paris. In 1832 appeared his first novel, *Sous les Tilleuls*, originally written in verse, and which at once brought him into notice. Numerous other works followed in rapid succession, and he also contributed largely to journals and reviews, including the *Revue des Deux Mondes*. In 1835 he became editor of the *Figaro*, and in 1839 commenced in it the fortnightly *Guêpes* ('Wasps'), a publication which attracted much attention for a time by its witty and humorous anecdotes and character sketches, and brought him considerable profit and much ill-will. In 1855 he retired to Nice, where he finally became an enthusiastic grower of fruit and flowers. Died 1890.—His daughter, **THÉRÈSE KARR**, has published several works.

Karri, a valuable timber largely exported from Western Australia, and obtained from an enormous tree belonging to the *Eucalyptus* family.

Karroos, the name given in South Africa to the elevated table-lands, 3000 to 4000 feet above sea-level, lying between the mountain ranges. The soil is shallow but rich, and during the rainy season, or when artificially watered, vegetation is most profuse. The Karroos form excellent pasturage for cattle, sheep, and Angora goats; and great tracts are now occupied as farms, the uncertain rainfall being supplemented by permanent springs and large reservoirs. The 'Great Karroo,' in Cape Colony, extends from east to west for 300 miles, with a breadth of 70 miles.

Kars, a town on the Russo-Turkish frontier in Asia, formerly a Turkish fortress, and the scene of several gallant defences. Captured and annexed by the Russians in November, 1878, it has become the capital of a Russian province of the same name; area, 7175 sq. miles, pop. 162,979. It has since been connected with Batoum and Tiflis by military roads, and the fortifications have been much enlarged and strengthened. Pop. 11,981.

Karst, a mountain or elevated region of Austria, north-east of the Adriatic, in the Coast Lands, Carniola, Croatia, and Dalmatia.

Kartar'pur, a town of India, Punjab, hereditary residence of the *Guru* or high priest of the Sikhs. Pop. 9260.

Kartike'ya, the Hindu god of war. He is represented riding on a peacock, with six

heads and twelve hands, in which numerous weapons are brandished.

Karun', a navigable river of South-western Persia, falling into the Shatt-el-Arab, or joint stream of the Euphrates and Tigris. It has recently been opened to foreign trade as far as Ahwaz.

Karwar', a seaport of India, Bombay presidency, with a safe harbour and a good trade. Pop. 13,761.

Kasbin. See *Kazvin*.

Kaschau (ká-shou'), a town of Hungary, capital of the county of Abaujvar. It is beautifully situated, surrounded by vineyards, and one of the best-built towns in Hungary. Pop. 26,422.

Kasganj', a town of India, N.W. Provinces; well built, with a good trade in grain and sugar. Pop. 16,535.

Kashan', a town of Persia, province of Irak-Ajemi, in a fertile plain 90 miles south from Ispahan. It is regularly built, has many fine mosques, &c., and its silks, carpets, jewelry, &c., are much esteemed. Pop. 25,000 to 30,000.

Kashgar', a Chinese town of Central Asia, in Eastern Turkestan, on a river of the same name, with considerable manufactures of cotton, linen, gold and silver cloths, carpets, &c., and an extensive trade, its position at the junction of several great routes making it the emporium of much of the commerce of Central Asia. Pop. estimated at from 40,000 to 80,000.

Kashkar (*Ovis Polii*), a large species of sheep inhabiting the lofty plateaus of Central Asia. The male has very large horns bent circularly, while the female has horns resembling those of a goat.

Kashmir. See *Cashmere*.

Kasipur', town of India, N.W. Provinces, a great place of Hindu pilgrimage. Pop. 14,667.

Kassa'i, a river of Southern Africa, a tributary of the Sankulla, and thus belonging to the Congo system.

Kas'sala, a town in Nubia, on the Mareb, a tributary of the Nile, 250 miles east of Khartum, and about the same distance west of Massowah. It was formerly a place of importance, but has greatly declined since the rising of the Mahdi.

Kassel. See *Cassel*.

Kassimof', a town of Russia, in the government of and 70 miles E.N.E. of Riazan, on the Oka. It has a large trade, and carries on tanning, the boot and shoe manufacture, &c. Pop. 18,315.

Kastamu'ni, a town of Asia Minor, capital of the Turkish vilayet of its own name, 100 miles N.N.E. of Angora, with manufactures of printed cottons and copper-ware, dye-works, &c., and a trade in Angora-goat's hair. Pop. estimated at 40,000.

Kasur', town of India, Lahore district, Punjab, with manufactures of leather and a good trade. Pop. 17,336.

Kater, HENRY, an English writer on physics, born at Bristol in 1777, died in London 1835. He joined the Indian army, gained the rank of captain, and rendered great service by his trigonometrical surveys. His health compelled him to retire on half-pay in 1814, and henceforth he devoted his time to scientific pursuits; the seconds pendulum, terrestrial gravity, and standard measures commanding his chief attention.

Kathmandu. See *Khatmandu*.

Kat'rine, LOCH, a picturesque and much-frequented lake, Scotland, county of Perth, 5 miles east of Loch Lomond; 10 miles long, in some places 2 miles broad, encircled by lofty mountains and rocky ravines clothed with trees. At its east end is the celebrated pass of the Trossachs, rendered famous by Scott's *Lady of the Lake*. Through this pass a stream flows, carrying the surplus waters of the lake to Loch Achray. The water-supply to the city of Glasgow is drawn from Loch Katrine.

Kattywar, or KÁTHIÁWÁR (kät-hi-ä-wär'), a peninsula of Hindustan, Bombay presidency, between the Gulf of Cambay and the Runn of Cutch. Most of it is occupied by the Kattywar agency, formed by numerous small native states of Guzerat, many of which are tributaries to the British government, to the Guicowar of Baroda, or to the Nawab of Junagárh. The surface is generally undulating, the soil sandy, and only productive where irrigated. Cotton is the principal crop. Area about 22,000 square miles, pop. 2½ millions.

Katwijk (kät'wik), a place on the coast of Holland, near where the Rhine enters the sea by means of sluices, now much frequented for sea-bathing.

Ka'tydid (*Platyphyllum concavum*), a species of grasshopper of a pale green colour, body about an inch long, found in some parts of North America, and so named from the sound of its note. This is produced by the friction of the taborets in the triangular overlapping portion of each wing-cover against the other, and is strengthened by the escape of air from the sacs of the

body, so as to be heard on a quiet night at a quarter of a mile distance. The females are noiseless.

Katzbach (kàts'bàh), a small river of Prussia, in Silesia, passing near Liegnitz, famous for the important and decisive victory which the Prussians under Blücher gained, August 26, 1813, over the French under Macdonald.

Kauai (kou'î), the most north-westerly island of the Sandwich group.

Kaufmann, MARIE ANGELICA, a distinguished painter, born at Coire, Switzerland, 1741, died at Rome 1807. She received instruction in drawing and painting from her father, himself a painter, and before the age of twenty she had become famous. The study of the Italian masters perfected her style, and while at Venice she was induced to go to London (in 1765), where she had a very successful career. Sir Joshua Reynolds is said to have been in love with her, but she married a Swedish adventurer calling himself Count Horn, from whom she afterwards obtained a divorce. In 1781 she married a Venetian landscape-painter named Zucchi, returned the following year to Italy, and finally settled in Rome. She is at her best in ideal figures, her faces are tender and elevating, her grouping and draping excellent, but her design often lacks energy and firmness, while her colouring (the latest paintings excepted) is rather too brilliant. She was one of the original members of the Royal Academy.

Kaulbach (koul'bàh), **WILHELM VON**, one of the greatest of modern German painters, born at Arolsen, Waldeck, in 1805; died at Munich of cholera in 1874. He studied at the art academy of Düsseldorf under Cornelius, whom he assisted in the execution of the frescoes of the Glyptothek or gallery at Munich, and subsequently succeeded in the Munich Academy. The desire of King Ludwig of Bavaria to make Munich the centre of German art afforded free scope for his genius, and he was long engaged in the decoration of the Hofgarten, the Odeon, the palaces of Maximilian and Ludwig, and the new Pinacothek, for which he did the series of designs of contemporary groups of artists, architects, &c., executed in fresco on the exterior. His most ambitious pictures, with the exception of the Madhouse (1828), are to be found in a series (utilized in the decoration of the Berlin Museum) seeking to depict the progress of the human race in typical scenes from the great historic periods,

and comprising the Tower of Babel, Age of Homer, Destruction of Jerusalem, Battle of the Huns and Romans, the Crusades, and the Reformation (1834-63). Besides these, however, he left a large number of



W. von Kaulbach.

portraits, designs, and illustrations of books, including the *Reineke Fuchs*, the Gospels, and the works of Shakespeare, Goethe, and Schiller. As a colourist he was of inferior rank, his main strength lying in form and composition. In choice and handling of themes he showed the width of range of a mind of very high order, essaying with exceptional success all styles of his art from Michael Angelo to Hogarth; but the artistic value of his work is often lessened by a tendency to symbolism and allegory, and a too obvious straining after an idea. He stands in the transition from the idealism of Cornelius to the more realistic schools of modern historic painters.

Kauri Pine (*Dammāra austrālis*), a tree peculiar to New Zealand, and found there only at the northern extremity of the North Island. It reaches the height of 150 feet, and its timber is much valued for building purposes, for making furniture, &c., but unfortunately the supply is not likely to hold out long. The resin of this tree, the kauri gum, forms a valuable export, and is used in making fine varnish, &c. Most of it is obtained in a fossil state, by digging.

Kava. See *Ava-ava*.

Kavanagh (kav'a-nà), **JULIA**, a British novelist, born at Thurles (Tipperary) 1824, died at Nice 1877. She was educated and lived much in Paris. Madeleine, Natalie, and Daisy Burns, are some of her best

novels, while *Women in France of the 18th Century* is an excellent biographical work.

Kaveri. See *Cavery*.

Kaye, SIR JOHN WILLIAM, English writer, born in 1814, died 1876. He was educated at Eton and Addiscombe Military College, served as officer in India until 1841, entered the civil service of the East India Company in London 1856, and became a secretary at the India office in the following year. He was a shrewd observer, and made good use of his Indian, military, and official experience in the production of many historical and biographical works, chief among which are his *Histories of Afghanistan*, of the East India Company, and of the Sepoy War.

Kazan', a city of European Russia, capital of the gov. of same name, situated on the Kasanka, about 4 miles above its junction with the Volga. It is an extensive city, strongly fortified, with large wool-combing, weaving, and dyeing establishments, tanneries and soap-works, and a government dockyard in its vicinity. The timber, flour, and hemp fairs of Kazan are of the largest in the Russian Empire. The university is a great seat for oriental learning, with nearly 1000 students. Pop. 1890, 134,359.—The gov. is surrounded by the governments of Viatka, Orenburg, Nijni-Novgorod, and Simbirsk; area 24,601, pop. 1,992,985. It is well watered by the Volga, the Kama, the Sura, the Viatka, the Kasanka; the climate is temperate; agriculture, cattle-raising, and fishing are the chief occupations.

Kazan'lik, a town of Eastern Roumelia, at the foot of the Balkans. Pop. 20,000.

Kaz'vin, a town of Persia, prov. Irak-Ajemi, 90 miles north-west of Teheran. It has been greatly devastated by earthquakes, but has still a considerable trade. Pop. 25,000.

Kean, CHARLES JOHN, actor, son of the celebrated Edmund Kean, born at Waterford 1811, died at London 1868. He was educated at Eton, but being thrown on his own resources in 1827 he took to the stage, and made his *début* at Drury Lane as Young Norval. In 1830 he visited America, established his reputation, and reappeared as a leading actor in London in 1838, among his parts being Hamlet and Richard III. He married the accomplished actress Ellen Tree in 1842, revisited the United States in 1845, and in 1851 became sole lessee of the Princess' Theatre, London, where he put some of Shakspeare's plays on the stage with a splen-

dour never before attempted. In 1863 he made a tour to Australia, California, Jamaica, the United States, Canada, &c., which proved a great financial success. On his return he continued to play in London and the provinces until a short time before his death. He inherited little of his father's genius, and his success was largely due to effective staging.

Kean, EDMUND, the most brilliant tragic actor of his age, born in London 1787 or 1789, died at Richmond 1833. His parents were poor and connected in a low capacity with the theatrical profession. At two years of age he was placed in a pantomime, at seven he went to school, but ran away, and for a short time he was a cabin-boy in a vessel. Returning to the boards he ultimately obtained an engagement at one of the minor London theatres. When not yet thirteen years of age he managed to please his country audiences as Hamlet, Cato, &c., and in Windsor he gained the applause of the royal family in Richard III. In 1814 he appeared at Drury Lane as Shylock and Richard III. His success was sudden and unexampled, and was equally great in other parts, including Othello, Hamlet, Macbeth, Iago, Lear, &c. He made his last appearance in Othello in 1833.

Kearney, Buffalo co., Neb., on Union Pacific and Burlington & Missouri Railroads. Pop. 1890, 8074.

Kearny, PHILIP, soldier, was born in New York city in 1815. In 1839 he served in the French army with distinguished gallantry, as also through the Mexican war; afterward participating in the war in Italy in 1859. In the U. S. civil war his daring courage manifested itself. He was killed at Chantilly, Sept. 1, 1862.

Keats, JOHN, an English poet, was the son of a livery-stable proprietor, and was born in London 29th October, 1795; died at Rome 24th February, 1821. In 1803-9 he was at a school at Enfield, after which he was apprenticed to a surgeon. This profession was not congenial, and he got his indentures cancelled, but continued his medical training at Guy's Hospital till about 1817. He now devoted himself entirely to literature, having as friends or acquaintances Leigh Hunt, Shelley, and other distinguished authors. His first volume of poems came out in 1817. *Endymion*, a Poetic Romance, appeared in 1818; his last volume of poetry, containing *Lamia*, *Isabella*, *The Eve of St. Agnes*, *Hyperion*, and

other poems in 1820. By this time he had become so ill of consumption (inherited from his mother) that he was advised to seek a warmer climate; but it was too late, and though he reached Rome he only survived a short time. Shelley honoured his memory by his elegy *Adonais*. Keats charms by his love of nature, his keen sensuous perception, and his sweet harmony; but his beautiful thoughts are often hidden by wild fancies, while errors of taste and faults of diction abound in his poetry. But his later works are free of many of the faults of the earlier productions, and place him in the front rank of the poets of his age.

Kebla. See *Kaaba*.

Keble, JOHN, an English divine and poet, born 1792, died 1866. He gained his bachelor's degree at Oxford University, 1810, where he became afterwards public examiner and professor of poetry. In 1835 he obtained the living of Hursley, near Winchester, which he held until his death. As a zealous high churchman he was associated with Newman and Pusey in getting up the famous Tracts for the Times (1833). His reputation is chiefly due to his well-known volume of hymns, *The Christian Year*. He also wrote *Lyra Innocentium*, a series of poems on children, Sermons, &c. Keble College, Oxford, was established in honour of his memory.

Ke'ble College, one of the colleges of Oxford University, built by subscription as a memorial of the Rev. John Keble (see above), and incorporated in 1870 by royal charter. The charter declares it to be 'founded and constituted with the especial object and intent of providing persons desirous of academical education, and willing to live economically, with a college wherein sober living and high culture of the mind may be combined with Christian training, based upon the principles of the Church of England.' The college is a flourishing institution, and has the patronage of about a dozen livings.

Kecskemet (kech'ke-met), one of the largest market towns of Hungary, 50 miles south-east of Budapest. It has an extensive trade in horses and cattle, and much-frequented fairs. Pop. 1891, 48,234.

Kedge, a small anchor used to keep a ship steady and clear from her bower anchor, while she rides in a harbour or river, also in removing her from one part of a harbour to another. See *Anchor*.

Keel, the bottom timber in a wooden

vessel which forms the main support and connection of the whole fabric. It is generally composed of several thick pieces of timber placed lengthways, scarfed and bolted together. A piece bolted to the bottom of the keel is called the *false keel*, and an internal piece, also bolted to the keel, is called the *keelson*. In iron vessels the arrangement of parts is altogether different.

Keeling Islands, or **COCOS ISLANDS**, a small group of coral islands in the Indian Ocean, south of Sumatra, discovered by William Keeling in 1609, belonging to Britain, and since 1885 a dependency of the Straits Settlements; area about 9 square miles, pop. about 500, partly consisting of members of a family of the name of Ross, who manage all the affairs of the islands, but chiefly of Malays born on the islands, and a smaller number of imported Java coolies. The islands form a sort of horse-shoe, inclosing a lagoon. They are all thickly planted with cocoa-nuts, which form the principal product. Rice is the chief import. The sea teems with fish, which are largely caught. Poultry, sheep, and rabbits have been introduced.

Keene, Cheshire co., N. H., is a handsome city, pleasantly located, on Ashuelot River; has various manuf. Pop. 1890, 7446.

Keep, in castles of the old type, a kind of strong tower, to which the besieged retreated and made their last efforts of defence.

Keeper of the Great Seal, in England, so called because the sovereign's great seal is delivered into his custody. See *Chancellor*.

Keeper of the Privy Seal, in England, an official through whose hands pass all charters signed by the king, before they come to the great seal.

Keewat'in. See *Kewatin*.

Kehl (kāl), a town of Baden, at the confluence of the Kinzig and Schutter with the Rhine, opposite Strasburg, once an important fortress, but its fortifications have been dismantled. Pop. 3215.

Keighley (kē'lā), or **KEITHLEY** (kēth'lā), a municipal borough of England, W. Riding of York; the head-quarters of the worsted spinning trade. There are also several paper and corn mills, machine and tool factories. It gives name to the parl. div. of the county. Pop. 1891, 30,811.

Kei River, GREAT, in South-east Africa, formerly the boundary between British Kaffraria and Kaffraria Proper, rises, with its branches the Black and White Kei, in

the Stormbergen Mountains, and flows south-west into the Indian Ocean.

Keisk'ama, a river in South Africa, formerly the boundary between Cape Colony and British Kaffraria.

Keith (kēth), a town of Scotland, partly in Banff, partly in Elginshire, on the Isla, 15 miles S.E. of Elgin. It has flour-mills, some spinning and weaving of wool, and other industries. Pop. 4339.

Keith (kēth), a distinguished Scottish family, to which belonged the hereditary office of grand-marischal of the kingdom. The first earl-marischal was William Keith, created earl in 1458. A successor of his, the fifth earl-marischal, founded and endowed Marischal College and University, Aberdeen. The family had at one time great estates, their head-quarters being in Aberdeenshire and Kincardineshire, in which latter county Dunnottar Castle was their seat. The most celebrated of the Keiths was JAMES, field-marshal under Frederick the Great, son of William Keith, ninth earl-marischal, born 1696, died on the battle-field of Hochkirch 1758. When nineteen years of age he fought under the standard of the Pretender in the battle of Sheriffmuir, 1715, where he was wounded. Outlawed and deprived of his property, he fled to France, studied mathematics and military tactics with sufficient success to become member of the Académie des Sciences, Paris. In 1717 he travelled in Italy, Switzerland, Portugal, and Spain, where he obtained the command of an Irish brigade through the influence of the Duke of Liria. He went with the duke to St. Petersburg, obtained high command under the Czarina Elizabeth, and distinguished himself in the wars against the Turks and the Swedes. In 1747 he transferred his services to Prussia, became field-marshal and confidential adviser and companion of Frederick the Great, and in 1749 governor of Berlin. Keith highly distinguished himself in the wars of that monarch. He was a man of great talent, remarkable bravery, and rigid honesty, faithfulness, and disinterestedness. A marble statue was erected to his memory in Berlin by Frederick, and a copy of it in bronze was presented to Peterhead by King William of Prussia in 1868. Keith's eldest brother GEORGE, tenth earl-marischal (born 1685, died 1778), had also to leave Scotland for his share in the Jacobite rising. He latterly joined his brother in Berlin, and also gained the favour of the king. He regained his titles, and some of his Scottish

lands, but did not return to reside in his native country. He made himself highly useful to Frederick as a diplomatist.

Kelat', or **KHELAT'**, a town of Beluchistan, capital of the territories of the Khan of Kelat, occupies the side of a hill at a height of nearly 7000 feet above the sea. It is surrounded by a mud wall flanked with bastions, and the streets are narrow and filthy. The manufactures consist chiefly of muskets and sword cutlery; and there is a small trade with Sind, Bombay, and Candahar. Kelat was stormed by the British in 1839, recaptured by insurgents from a weak garrison of Sepoys, and again taken by the British. Pop. estimated at 12,000.

Kellermann, **FRANÇOIS CHRISTOPHE**, Duke of Valmy, marshal and peer of France, born 1735, died 1820. He joined the army as a volunteer in 1752, distinguished himself during the Seven Years' war, and rose rapidly to the command of an army corps. At the commencement of the revolutionary war he received the command of the army of the Moselle, formed a junction with Dumouriez, and sustained the 'cannonade of Valmy,' which caused the allies to retreat. In the following wars Kellermann received various commands, and Napoleon loaded him with honours. After the restoration of the Bourbons he was appointed a member of the chamber of peers. His son, the second duke, born 1770, died 1835, also distinguished himself in the Napoleonic wars, in Italy, in the Peninsula in the campaign of 1813, at Ligny, and at Waterloo.

Kells (originally *Kenlis*), a town of Ireland, county Meath, picturesquely situated on a small hill near the Blackwater, 35 miles north-west of Dublin. It is a very ancient town, and was formerly a place of much ecclesiastical importance, with magnificent edifices. There is a round-tower here. Pop. 2822.

Kelp, in commerce, the crude alkaline substance obtained by burning sea-weeds, chiefly of the species *Fucus serratus*, *F. vesiculōsus*, *F. nodōsus*, *Laminaria bulbōsa*, *L. digitāta*. The sea-weed is gathered during the summer, dried on the shore, then stacked under shelter for some weeks until it becomes covered with a white saline efflorescence, when it is ready for burning, which is effected in a round brick-lined pit, or oblong kiln. As the weed softens, it is well stirred with a heated iron until it becomes a semi-fluid mass; it is then cooled and broken into pieces ready for the market.

When salt was dear, the bulk of soda used in soap-making was obtained from kelp and barilla, and the kelp manufacture was a source of large profit in Ireland, Scotland, and the Hebrides; but since soda can be manufactured from salt much cheaper, it has ceased to be a flourishing industry. Kelp is now chiefly used for the production of iodine and chloride of potassium; a ton of kelp yields about 8 lbs. of iodine. The sea-weed of Guernsey is the richest in iodine.

Kelso, a Scottish town in Roxburghshire, beautifully situated at the confluence of the Teviot and Tweed, on the left bank of the latter, 38 miles S.E. of Edinburgh. In the outskirts of the town are the magnificent ruins of Kelso Abbey, founded and endowed by David I. in 1128. It is in the form of a Latin cross, and is a fine specimen of the Norman style of architecture. In the immediate vicinity is Floors Castle, the seat of the ducal family of Roxburghe. Pop. 4687.

Kelts. See *Celts*.

Kelung', a town and seaport of China, in the northern part of the island of Formosa. It was opened to foreign commerce in 1863, and has since rapidly increased in importance. Coal-fields are worked by the Chinese in the neighbourhood, and large quantities of coal are exported. There is also an extensive export trade in rice, sugar, and camphor. Pop. 70,000.

Kemble, CHARLES, English actor, born 1775, died 1854, a younger brother of John Phillip Kemble. He was educated at Douay (France), returned to England 1792, obtained a situation in the post-office, but relinquished it in favour of the stage in 1794, when he made his first appearance at Drury Lane. His success was largely due to his representations of such characters as Edgar, Romeo, Charles Surface, Antony, &c.; and to his fine voice, handsome face, and figure. He was appointed censor of plays in 1840, when he retired from the stage, and only gave occasional Shaksperian readings. He had married the favourite actress Miss de Camp in 1806, by whom he was the father of John Mitchell Kemble, Frances Anne Kemble, and Adelaide Kemble.

Kemble, FRANCES ANNE, popularly known as Fanny Kemble, writer and actress, eldest daughter of Charles Kemble, and niece of Mrs. Siddons, was born at London 1811. Her father being in financial difficulties she was induced to appear on the stage, which she did in 1829 at Covent Garden as Juliet, and her success was so great that in the course

of three years she managed to relieve the fallen fortunes of the family. Her trip to America in company with her father was also a splendid triumph, and while there she contracted an unfortunate marriage (1834), which was annulled by divorce 15 years afterwards. She retired for many years to Lenox (Mass.), where she was busy with her pen. She returned to London in 1847, and from that time has resided alternately in America, England, and the Continent, appearing at intervals as a public reader. Of her most successful writings are the tragedy Francis I. (in which she herself acted the part of Louis of Savoy); *Journal of a Residence in the United States*; *Journal of a Residence on a Georgia Plantation*; *Records of a Girlhood*; *Records of Later Life*; and her *Notes on some of Shakspeare's plays*. As an actress she excelled in the characters of Portia, Beatrice, Lady Macbeth, Lady Teazle, and of Julia in the *Hunchback*. She died Jan. 16, 1893. Her sister ADELAIDE, born 1820, greatly distinguished herself on the operatic stage, but retired on her marriage in 1843.

Kemble, JOHN MITCHELL, an eminent Anglo-Saxon scholar, son of Charles Kemble, born 1807, died 1857. He graduated at Cambridge, and, having taken up the study of Anglo-Saxon, spent a considerable time in studying the ancient MSS. in the libraries there. He edited *Beowulf* and other Anglo-Saxon works, including an incomplete edition of the Anglo-Saxon Gospels, and a collection of all the known charters of the Anglo-Saxon period, under the title of *Codex Diplomaticus Ævi Saxonici*. Perhaps his most valuable work (only complete so far) is the *Saxons in England* (London 1849, 2 vols.). For a number of years he edited the *British and Foreign Review*, and latterly he acted as censor of plays.

Kemble, JOHN PHILIP, one of the most eminent tragedians of the British stage, eldest son of Roger Kemble (manager of a provincial theatrical company), born at Preston 1757, died at Lausanne 1823. Being intended for the church he was sent to the Roman Catholic college of Douay (France), where he distinguished himself by his fine elocution; but, in spite of his parents' opposition, he selected the stage as a profession, made his first appearance at Drury Lane in 1783, and became at once popular. He was afterwards manager of this theatre in 1788-1802. From 1801 to 1803 he made a most successful tour in France and Spain, and on

his return to London purchased a share in the Covent Garden Theatre, and made himself a splendid reputation in the characters of Julius Cæsar, Hamlet, Macbeth, Coriolanus, &c. His theatre having been burned down, he opened the new edifice in 1809 with an increase of prices, which, together with certain other obnoxious arrangements, created for a series of nights the notable disturbances known by the name of the *O. P. (old price) riots*. He abandoned the stage in 1817, and received many tokens of esteem from his numerous admirers on that occasion. His statue was placed in Westminster Abbey in 1833. His acting was distinguished for dignity, precision, and studious preparation, but was wanting in fire and pathos. His sister, Sarah, was the celebrated Mrs. Siddons.

Kemp'en, a manufacturing town in Rhenish Prussia, 20 miles N.W. of Düsseldorf, celebrated as the birthplace of Thomas à Kempis (1380). Pop. 5952.—There is another town of the same name in the Prussian province of Posen. Pop. 5787.

Kempis, THOMAS À. See *Thomas à Kempis*.

Kemp'ten, a fortified Bavarian town on the Iller, which is here navigable, 65 miles S.W. of Munich. It has large cotton mills, woollen and linen factories, and much-frequented fairs. Pop. 14,212.

Ken, THOMAS, an English prelate of great learning and moral worth, born 1637, died 1711. After studying at Oxford he became successively chaplain to the Princess of Orange, to the Earl of Dartmouth, and in 1684 to Charles II., who made him Bishop of Bath and Wells. In 1688 he was sent to the tower for resisting the dispensing power claimed by James II., and yet some months later he refused to take the oath of allegiance to William of Orange, and was dispossessed of his see; but Queen Anne granted him a pension. His sermons and moral treatises have long been forgotten, but his morning and evening hymns are still cherished in many a household.

Kendal, or KIRKBY-KENDAL, an English manufacturing town, formerly a parl. borough, and now giving name to a parl. div., county Westmoreland, agreeably situated on the Kent. Amongst its manufactures are serges, carpets, tweeds, knitted goods, fish-hooks, &c. Pop. 1891, 14,430.

Kenia, an isolated mountain mass in Eastern Africa, only a few miles south of the equator, about 18,000 feet high.

Ken'ilworth, a town of England, in Warwickshire, 4 miles north of Warwick. Kenilworth Castle, now a magnificent ivy-covered ruin, was founded in the reign of Henry I. The gorgeous entertainment given here in 1575 to Queen Elizabeth by the Earl of Leicester is familiar to all from Scott's romance of Kenilworth. Pop. 4173.

Kennebec, a river of the United States, Maine, rises in Moosehead Lake, and after a course of 150 miles, mostly E.S.E., empties itself into the Atlantic 12 miles below Bath. It is navigable for ships as far as Bath, for steamers to Hallowell, 40 miles.

Kenneh, or KENEH, a town of Upper Egypt, on the right bank of the Nile, well known for its pottery manufacture, and carrying on a considerable trade with Arabia and India by way of Kosseir. Pop. 15,402.

Kennicott, BENJAMIN, D.D., English divine, professor of theology at Oxford, born in 1718, died at Oxford 1783. He is best known by his edition of the Hebrew text of the Bible, the finest edition extant.

Kenosha, Kenosha co., Wis., on Lake Michigan. Pop. 1890, 6532.

Kenrick, FRANCIS PATRICK, R. C. archbishop, was born in Dublin, Ireland, in 1797. In 1830 he was nominated coadjutor Bishop of Philadelphia. In 1851 he was translated to the see of Baltimore. He was a profound Hebrew scholar, and was considered the ablest theologian the R. C. Church has produced in the United States. His theological works have been largely used. He died in 1863.

Ken'sington, a western and fashionable suburb of London, constituting a parl. bor. with two members. Pop. 1891, 166,321.

Kensington Museum, or SOUTH KENSINGTON MUSEUM, a museum in London, originated by Prince Albert in 1852. It is a red brick and terra-cotta structure in the renaissance style, and was first opened in 1857. It contains probably the most beautiful and generally interesting collection in Europe, comprising objects of industrial art, both ancient and modern, products and materials used in manufactures, building, engineering, &c.; reproductions of ancient sculpture and architecture, modern paintings in oil and water-colour, and sculpture by British artists, besides occasional loan collections. South Kensington Museum is under the direction of the Council of Education and receives large government grants. It forms the centre of industrial art education in

KENT—KENTUCKY RIVER.

Great Britain, and a school of science and cookery are also connected with it.

Kent, a maritime county of England, forming the south-east extremity of the kingdom; area, 995,392 acres, of which nearly the whole is arable, meadow, or pasture. Off the east coast lie the well-known Goodwin Sands, between which and the mainland is the roadstead called the Downs. The county is traversed from east to west by the North Downs, a range of chalk hills rising to 650 feet, and terminating in lofty chalk cliffs at Dover, Folkestone, and Hythe. The district south of this range, or between it and Sussex, is called the Weald, and was anciently an immense forest. Its south-eastern portion comprises Romney Marsh. The chief river is the Medway, which enters the estuary of the Thames. The soil is generally fertile, and agriculture is in a most advanced state. Kent is the principal hop county, but large crops of wheat, barley, beans, and peas are also raised, and the cultivation of fruit, flowers, and vegetables is carried on extensively, London offering a near and ready market for this kind of produce. Kent has justly been termed the 'Garden of England.' Its chief manufactures are paper, chemicals, and gunpowder, and there are also some calico-printing and bleaching works. The county town is Maidstone; other towns are Canterbury, Rochester, Chatham, Greenwich, Deptford, Woolwich, Gravesend, Dover, Folkestone, Hythe, Ramsgate, and Margate. Kent is divided into eight parliamentary divisions, each with one member. Pop. 1891, 1,142,281.

Kent, JAMES, an eminent American jurist, born 1763, died 1847. He was educated at Yale College, studied law, and was admitted an attorney in 1785. After practising at Poughkeepsie he settled in New York, and became professor of law at Columbia College (1794-98). He was successively appointed master in chancery, recorder, judge of the Supreme Court, chief justice (1804-14), and latterly chancellor of New York (1814-23). He again accepted the law professorship at Columbia College in 1824-25. His *Commentaries on American Law* (1826-30) at once became a standard work, while his decisions were quoted in the courts as of the highest authority.

Kent, WILLIAM, an English landscape gardener and artist, born 1685, died 1748. He was apprenticed to a coach-painter, but repaired to London, tried his hand at por-

trait and historic painting, and with the assistance of some of his patrons was enabled to study for some years in Italy. On his return he carried out some architectural work which was much admired, but he is best known as the founder of modern landscape gardening.

Kenton, Hardin co., Ohio, has large lumber trade. Pop. 1890, 5557.

Kent's Hole, a cavern near Torquay, Devonshire, England, in which have been found many bones of extinct animals.

Kentuck'y, one of the United States, bounded N. by Ohio and Indiana, N.W. by Illinois, W. by Missouri, S. by Tennessee, and E. by Virginia and West Virginia; area, 40,400 sq. miles. The surface of the state is gently undulating, excepting the south-east, which is somewhat mountainous. Few states are better provided with water communication. The Ohio forms the boundary on the north, and receives from within the state numerous tributaries, of which the most important are the Cumberland, Kentucky, and Tennessee; the Mississippi, after receiving the Ohio, forms the boundary on the west. The climate is salubrious, the soil fertile, the principal crops being wheat, Indian corn, and tobacco; but oats, barley, hemp, and fruit are extensively raised, and stock breeding is another important feature, the Kentucky cattle and horses especially being celebrated. The 'blue-grass' region furnishes admirable pasture. Coal and iron ores of various descriptions abound in many parts of the state. Limestone occupies a large area, and in this formation are the Mammoth Cave and others. The chief manufacturing industries comprise cotton and woollen factories, iron-works, and tanneries. The central position of the state, and the abundant water and railway communication, have secured it a rapid commercial development. Kentucky originally formed part of Virginia, but was separated from it in 1790, and admitted into the Union in 1792. The seat of government is Frankfort, a comparatively small place; the oldest town is Lexington; but the largest and by far the most important is Louisville. Pop. 1890, 1,858,635.

Kentucky River, a river of the United States, rises in the Cumberland Mountains, traverses the State of Kentucky, and after a course of 260 miles flows into the Ohio at Carrollton. By a series of improvements the lower portion has been rendered continuously navigable for steamers.

Ke'okuk, a town, United States, Iowa, at the foot of the lower rapids of the Mississippi, 2 miles above the confluence of the Des Moines. It is an important business centre, and has numerous flour and saw mills, foundries, pork-packing establishments, &c. Pop. 1890, 14,101.

Kephallenia. See *Cephalonia*.

Kepler, JOHANN, a great German mathematician and astronomer, born 1571, near Weil (Württemberg), died at Ratisbon 1630. He studied at the University of Tübingen, and in 1593 he was appointed a teacher of mathematics at Gratz (Styria). Here he



Johann Kepler.

devoted himself with much ardour to the study of astronomy; but in 1599 the religious persecutions commenced in Styria, and Kepler, being a Protestant, gladly accepted Tycho Brahe's invitation to Prague, to assist in the preparation of the new astronomical tables, called the Rodolphine Tables. Tycho died in 1601, and Kepler continued the work alone, being appointed imperial mathematician and astronomer. After twenty-five years' incessant labour the tables were published in 1627 at Ulm. Kepler had become the happy possessor of all Tycho's papers, and the mass of observations made by that astronomer during twenty years, with a precision till then unsurpassed, enabled Kepler to establish his three laws (see next article) which have proved so fruitful in the development of astronomical science. Kepler enjoyed the patronage of the Emperors Rodolph and Ferdinand, the Dukes of Württemberg and Wallenstein, but his life was a continued struggle; he was exposed to much religious persecution, and his domestic relations were equally unfortunate. The latter part of

his life was chiefly passed at Linz as professor of mathematics. He wrote much, but the work that has rendered him immortal is his *Astronomia Nova, seu Physica Cœlestis tradita Commentariis de Motibus Stellæ Martis* (New Astronomy, or Celestial Physics delivered in Commentaries on the Motions of Mars; Prague, 1609, folio).

Kepler's Laws, in astronomy, three laws discovered by Kepler (see preceding article) on which were founded Newton's discoveries, as well as the whole modern theory of the planets:—1. Every planet describes an ellipse, the sun occupying its focus. 2. The radius vector (line joining the centre of the sun with the centre of the planet) of each planet sweeps over equal areas in equal times. 3. The squares of the periodic times (the periods of complete revolution round the sun) of two planets are proportional to the cubes of their mean distances from the sun. These laws enabled Newton to determine the laws of the attraction of gravitation.

Keppel, AUGUSTUS, a British admiral, born 1725, died 1786; was the second son of the Earl of Albemarle. He entered the sea service at an early age, and accompanied Admiral Anson round the world (1740–45). He was placed in command of the Channel fleet in 1778, and in July of that year engaged the French fleet off Ushant. Having become partly disabled he signalled for his van and rear divisions, but Palliser in command of the rear ignored the signal until too late. Palliser accused him of incapacity and cowardice, but Keppel was honourably acquitted, and received the thanks of both houses of parliament. In 1782 he was raised to the peerage under the title of Viscount Keppel and Baron Eldon. He was first lord of the admiralty in the cabinets of the Marquis of Rockingham and the Duke of Portland in 1782 and 1783.

Ker'atin (Gr. *keras*, a horn), a substance obtained from claws, feathers, hair, horn, nails, wool, and other epidermal appendages.

Ker'bela, a town of Asiatic Turkey, vilayet of Bagdad, about 60 miles s.s.w. from Bagdad and 20 miles w. of the Euphrates. It is a very ancient city and holy to Mohammedans, especially to the Shiites, who make pilgrimages there in thousands, creating a brisk trade. Some of these pilgrims carry the bones of relatives for burial there, and the fees exacted form an important revenue. Pop. about 15,000.

Kerguelen's Land, KERGUELEN ISLAND (ker'glen), an uninhabited mountainous

island lying in the Indian Ocean about midway between the Cape of Good Hope and Australia, discovered by the French navigator Kerguelen in 1772. Its outline is very irregular, the island being much cut up by fjords and inlets; greatest length about 85 miles, greatest breadth 79; highest summit over 6000 feet. The scenery is picturesque and often magnificent; glaciers and snow-fields occupy a considerable area. The climate is wet and stormy, the temperature never very high nor very low. The fauna and flora are somewhat limited. The former includes the fur seal, sea elephant, and numerous penguins, petrels, the albatross, &c.; the latter is most abundant in mosses and lichens, but the most peculiar form is the Kerguelen cabbage (*Pringlea antiscorbutica*), a perennial cruciferous plant. Trees are wanting. The island is only occasionally visited by whalers and sealers. Cook visited it in 1777, Ross in 1840, the *Challenger* Expedition in 1874, and in 1874-75 parties from Britain, Germany, and the United States were stationed here to observe the transit of Venus.

Kerkuk', officially called SHAHR-ZUL, a town of Asiatic Turkey, vilayet of Bagdad, about 140 miles N. of Bagdad, and the residence of the pasha. There are a number of petroleum and naphtha springs in its neighbourhood, and it has considerable trade. Population, chiefly Kurds and Jews, 12,000 to 15,000.

Kermadec Islands, since 1840 a British dependency under the jurisdiction of a New Zealand magistrate, but formally annexed in August 1887. They consist of four principal islands, surrounded by a number of small islets and rocks. The most northerly and the largest is Sunday Island, 674 miles north-east of Auckland, area 7200 acres. They are of volcanic origin, and earthquakes and other disturbances have taken place in recent years. The surface is mostly rugged, but tracts occur not too steep for cultivation, with a rich soil. The highest peak is 1723 feet above sea-level. Vegetation is luxurious, the flora being similar to that of Northern New Zealand; fish and birds are plentiful. There is no good harbour. The first settlers were two Englishmen married to Samoan girls, who landed on Sunday Island in 1837, but quitted it again in 1848. Others have been there since for shorter periods, and a family from Samoa took possession in 1878.

Kermân', KIRMÂN', or SIRGAN, a town in

Persia, capital of a province of the same name. It has numerous mosques, baths, caravanserais, and a well-furnished bazaar. Its manufactures consist of silks, shawls, woollens, &c. Pop. estimated at 40,000. The province of Kerman, in the south-east of Persia, has an area of 50,000 square miles and a population of 600,000. In the east and south the soil is very fertile, the date, the grape, and the silkworm are very much cultivated.

Kermanshah', or KIRMANSHAHÂN', a town in Persia, province of Ardilân. The manufactures consist chiefly of carpets; the trade, chiefly transit by the routes from Bagdad, Shuster, and Ispahan, is considerable. Pop. about 35,000.

Kermes (ker'mēz), the dried female insects of the species *Coccus ilicis*, found in many parts of Asia and South Europe on the leaves of a species of oak shrub (*Quercus coccifera*), and supplying a durable red and scarlet dye. They have been utilized for dyeing purposes in the East from very ancient times, and in Germany and Spain since the middle ages; but since the introduction of cochineal their use is confined to the Eastern countries and Spain, where the collection of these insects still gives employment to a number of people.

Kermes Mineral, amorphous antimony trisulphide, a brown-red powder used in the preparation of artists' colours.

Ker'osene, an illuminating oil obtained by refining crude petroleum. The bulk of kerosene is supplied by the United States and Russia. America controlled the kerosene market for many years, but Baku, on the Caspian, has now become a formidable rival, not only driving American kerosene out of the Russian market, but also supplanting it in other countries. See *Petroleum*.

Kerowlee. See *Karauli*.

Ker'ry, a maritime county of Ireland, on the south-west coast, in the province of Munster; area, 1,185,918 acres, of which about one-tenth is under tillage. Great part of it is mountainous, Carran Tual, the highest peak in Ireland, attaining a height of 3414 feet above sea-level; other parts are very fertile, producing excellent pasture and good crops of oats, barley, and potatoes, but agriculture is much neglected. The climate is mild and moist. The coast is much indented by bays and inlets (Dingle Bay, Kenmare River, &c.); the interior presents much fine scenery, including the picturesque lakes

of Killarney. Iron ore, copper, and lead exist, and a superior kind of slate and flag-stone are obtained in great quantities in the island of Valentia. The chief exports are oats and dairy produce. Kerry returns four members to the House of Commons. Principal towns, Tralee and Killarney. Pop. 1891, 178,919.

Ker'sey, a strong coarse woollen cloth, generally ribbed, and formerly largely manufactured in Germany, France, and the North of England, for riding and hunting suits, but now chiefly used in liveries for the parts exposed to extra strain and wear.

Ker'seymere, or CASSIMERE (from the town *Cashmere*), the name given to a light fabric woven from the finest wools, principally in the west of England, and at Elbeuf, France. It is chiefly used for ladies' jackets and gentlemen's gaiters.

Kertch, or KERCH (ancient *Panticapaeum*), a fortified seaport town of Russia, in the Crimean peninsula, on the Strait of Yenikale, connecting the Sea of Azof with the Black Sea. The modern town is of quite recent existence; it is well built, advantageously situated for commerce, and has a rapidly growing trade. Pop. 27,318.

Kesho. See *Hanoi*.

Kestrel, or WINDHOVER (*Falco tinnunculus*), a species of the falcon tribe, widely distributed in Europe. It is remarkable for its habit of remaining suspended in the



Kestrel (*Falco tinnunculus*).

air by means of rapid wing motion, being at this time on the look-out for mice, which are its chief food. At times it will also eat small birds, and insects frequently. It varies from 12 to 15 inches in length; it nests in trees, also in old towers and buildings, and often utilizes an old crow's nest. In winter it migrates to North Africa and India.

Keswick (kes'ik), a town of England, in the county of Cumberland, 22 miles south-

west of Carlisle, finely situated on the Greta, near Lake Derwentwater. Coarse woollens are manufactured, but the inhabitants depend chiefly upon the visitors to the romantic scenery in the neighbourhood. Pop. 1891, 3905.

Ketch, a two-masted vessel of the galliot type, usually from 100 to 250 tons burden. Ketches were formerly often used as yachts, also as bomb-vessels.

Ketcho. See *Hanoi*.

Ketchup, or CATSUP, said to be derived from the Japanese *kitjap*, a pungent sauce first introduced from the East, and employed as a seasoning for gravies, meat, and fish. It was formerly prepared from mushrooms only, but numerous other products are now used for the same purpose. The best ketchup is obtained from mushrooms, walnuts, and tomatoes; instructions for its preparation may be found in almost every cookery-book.

Kettering, a market town, England, in the county of Northampton. Boot and shoe making is the staple trade, besides which tanning, currying, and the manufacture of agricultural implements are carried on. Kettering is the centre of the iron-stone district of the county, and daily sends thousands of tons of ore into Wales, Derbyshire, and Yorkshire, besides having several smelting-furnaces in the neighbourhood. Pop. 1891, 19,454.

Kettle-drum. See *Drum*.

Kew, a small village in the county of Surrey, England, situated on the right bank of the Thames, $1\frac{1}{2}$ mile from Richmond. The royal botanic gardens and the connected pleasure-grounds (belonging to the nation), the former covering about 75 acres, the latter 250, are the chief attraction of visitors to Kew. They contain the finest collection of plants in the world, and are open to the public on Sundays as well as week-days. Connected with the gardens is a museum and a herbarium, including some splendid collections of preserved plants.

Kewatin (kē-wat'in), or KEEWATIN, a large Canadian territory under the jurisdiction of Manitoba, and stretching from Manitoba and Ontario to Hudson's Bay. The country is not much opened as yet; it is mostly densely wooded, and in many parts swampy, but rich in minerals, and game abounds. With a view to open up a new route via Hudson's Bay a railway through the territory has been begun.

Kew-Kiang, or **KIU-KIANG**, a town and seaport of China, province Kiangsi, on the south bank of the Yang-tse-kiang. Its situation is not favourable for an extensive commercial port, but derives importance from its connection with the green-tea districts. The port was opened to foreign trade in 1862, when the population was 10,000; it is now over 50,000.

Key, **KI**, a group of islands in the Indian Archipelago, about 50 miles west of the Arru Islands and about 70 miles from the south-west coast of New Guinea.

Key, or **KEY-NOTE**, in music, the principal or fundamental note or tone, to which the whole of a movement has a certain relation, to which all its modulations are referred and accommodated, and in which it generally both begins and ends. See *Music*.

Keys, the name given to islets and sunken rocks, particularly along the shores of Honduras, Central America, and the West India Islands, from the Spanish *cayo* (an islet rock).

Key-stone, in architecture, the last put in stone of an arch or vault, which locks or keys the whole together, whence the name. See *Arch*.

Key West, a small, low-lying coral island south of Florida, 60 miles s.w. of Cape Sable, and commanding the entrance to the Florida Passage and the Gulf of Mexico. Key West City, a port of entry and military station of the United States, has a safe and accessible harbour defended by a fort. Pop. 1890, 18,080.

Kezan'lik. See *Kazanlik*.

Khaibar (kī'bar). See *Khyber*.

Khairpur (khīr-pör'). See *Khyerpur*.

Khamgaon (khām-gä'on), a town of India, in Akola district, Berar, with a trade in cotton, grain, and opium. Pop. 12,390.

Khan, a title given by Tartars, Persians, and other eastern nations to princes, chieftains, commanders, and governors, but now generally reserved for governors of cities and provinces, these provinces being called *khanates*. Khan is also another term for caravansary, of which there are two kinds: one for pilgrims and travellers, with gratuitous entry, another, more commodious and with locked apartments, for traders, subject to a nominal charge.

Khandesh (khān-dāsh'), a district of British India, Bombay Presidency, forming the most northerly portion of the Deccan table-land, and intersected by the Tapti river; area, 9944 sq. miles; pop. 1,237,231.

Khandwa', a flourishing town of India,

Central Provinces, with a large trade. Pop. 15,142.

Khanpur (khān-pör'), a commercial town of India, in the Punjab, on a navigable canal from the Panjnad. Pop. 7189.

Khargeh (hār'jā), EL, a town in Upper Egypt, about 100 miles s.w. of Girgeh, the capital of the oasis of the same name, and an important station for caravans on the way to Darfur and Central Africa. It contains numerous ruins, and an acropolis of great interest. Pop. 5000 to 6000.

Kharkoff (hār-kof'), or **CHARKOV**, a government of the south of Russia; area, 21,041 sq. miles; pop. 2,243,463. The country is open, the climate mild, the soil usually fertile, and agriculture is the chief pursuit of its inhabitants. The capital, Kharkoff, situated at the confluence of the Kharkoff and Lopan, has a considerable trade in cattle, grain, &c., and manufactures beet-sugar, soap, candles, and leather. A bed of coal of immense extent in its vicinity is doing much to foster industries. The University of Kharkoff is an important educational centre. Pop. 171,416.

Kharpūt (hār'pūt), town of Turkish Armenia, 60 miles N. of Diarbekir, on the route to Siwas, picturesquely situated on a rocky eminence in a plain watered by the Euphrates. It is noted for its castle and other ruins. Pop. 25,000 to 30,000.

Khartoum (hār-töm'), a town in the Eastern Soudan, on the left bank of the Blue Nile, near its junction with the White Nile. It has sprung up since 1830, and was the capital of and largest town in the Egyptian Soudan, and the emporium of a large trade, ivory, gums, ostrich feathers, senna, &c., being exchanged for European goods, and slaves being also dealt in. It was the scene of Gordon's heroic defence against the insurgent Soudanese, and of his death in January 1885. (See *Gordon*.) Pop. about 50,000.

Khasi and Jaintia Hills, an administrative district of Assam; area, 6157 sq. miles; pop. 169,360. The Khasis are a peculiar race, speaking a monosyllabic agglutinative language that has no analogy elsewhere in India.

Khat. See *Catha*.

Khatmandu (khāt-mān-dö'), capital of the Kingdom of Nepāl, in Northern India, on the left bank of the Baghmati, on an elevated plateau, 150 miles north by west of Patna, with which it is connected by an important trade route. It is well built, and has many picturesque temples and pagodas.

It is the seat of a British resident, and has considerable trade with Tibet. Pop. about 50,000.

Khedive (ke-dēv'), a word signifying *lord*, the title of the rulers of Egypt, originally granted by a firman from the sultan in 1866 to Ismail Pasha, then *Vali* or viceroy of Egypt.

Kherson (her'son), or CHERSON, a maritime government of Southern Russia; area, 27,523 sq. miles; pop. 1,720,249. Almost the whole surface is one uninterrupted steppe, covered with long grass, and in many parts strongly impregnated with saltpetre. It is watered by the Dnieper, the Dniester, and the Bug. Agriculture is in a defective state, but considerable attention is paid to the cultivation of vegetables and fruit. The bulk of the trade is carried on by its port of Odessa.—**KHERSON**, the capital, an extensive town on the right bank of the Dnieper, about 15 miles above its estuary, was formerly a very important town; but its trade is rapidly declining, being absorbed by Odessa, and Nicolaieff, with its growing dockyards, 40 miles distant. Tallow melting, rope-making, and wool washing are still extensively carried on. Kherson is the resting-place of Howard, the philanthropist, and has a monument in its vicinity erected to his memory by the late Emperor Alexander. Pop. 61,824.

Khiva (hē'vā), or CHIVA, semi-independent khanate of Central Asia, forming part of Turkestan. It formerly occupied a large extent of surface on both sides of the Amu-Darya or Oxus, but since the cession to Russia, in 1873, of its territory on the east of the Amu, it is now confined to the west side of this river. It is of a triangular shape, each of its three sides—of which the Amu forms one—being about 300 miles in length. One of its angles rests on the Sea of Aral. A great part of the surface consists of deserts, thinly inhabited or uninhabitable; but along the Amu the land consists of rich alluvial loam of the greatest natural fertility, assisted by irrigation, and securing luxuriant crops of grain, cotton, madder, fruit, including the vine and vegetables. The winter is neither very severe nor prolonged, but the summer is very hot. Manufactures are very unimportant. Trade is now being rapidly developed by Russian influence, especially by their Transcaspian Railway from the Caspian to Samarkand. The total population is about half a million.—The capital, **KHIVA**, lies on an alluvial flat at the junction of two

canals, 50 miles west of the left bank of the Amu. It forms an irregular circuit of about 4 miles, and is inclosed by a dry ditch and an earthen wall about 20 feet in height and thickness, and entered by twelve gates, the masonry of which is of brick. Among the principal buildings are two palaces of the khan, a number of mosques, and the castles of the principal state officers. Pop. about 20,000.

Khoi (ho'i), town of Persia, prov. of Azerbaijan. Pop. 30,000.

Khojend, or KHOJENT, a town in Russian Turkestan, but formerly in the Khanate of Khokand, on the Bokhara frontier. It stands on elevated ground, and has been fortified by the Russians. It was formerly of much commercial importance, but trade has declined in recent years; a considerable trade in Russian goods is still carried on. Pop. 30,000.

Khokand, or KOKAND, formerly an independent khanate of Central Asia, but since 1876 forming the province of Ferg-hâna in Russian Turkestan. Its present area is 29,650 square miles, generally mountainous. It is traversed from east to west by the Sir Daria, which receives all its drainage. The summer is excessively hot, the winter cold, but dry. Cattle raising is the chief source of wealth, but heavy crops of grain and fruit are also produced. The manufactures consist chiefly of silk and cotton goods.—The capital, **KHOKAND**, is situated on both sides of the Sir. It manufactures silk and cotton fabrics, and is the centre of a large trade, ranking next in importance and size to Tashkent and Bokhara. Pop. 60,000.

Khorasan (hō-rä-sän'), a province of Persia, bordering on Afghanistan; area, 140,000 square miles; pop. 860,000. Much of the surface consists of deserts, but there are also fertile districts producing crops of cotton, hemp, aromatic and medicinal herbs. The most valuable mineral is the turquoise from the ancient mines of Nishapur. The principal manufactures are silk and woollen stuffs, carpets, muskets, and sword-blades. About two-thirds of the inhabitants are Persians proper; the remainder are chiefly Turcomans and Kurds.

Khosru I. See *Chosroes I.*

Khotin (hō'tin), or CHOCZIM, a fortified town of Russia, prov. Bessarabia, on the Dniester, near the Austrian frontier. It figured much in the wars of the Poles, Austrians, Turks, and Russians. Pop. 16,133.

Khurja (khör'ja), town of India, N.W. Provinces, with a fine Jain temple and other good buildings, and a flourishing trade, especially in cotton. Pop. 27,190.

Khusháb, town of India, in the Punjab, on the river Jhelum. Pop. 8989.

Khuzistan (hū-zis-tān'), or ARABISTAN, a province of Persia, bounded on the south by the Persian Gulf, and on the west by Asiatic Turkey; area, 38,600 square miles, watered by the Karun and others streams; pop. estimated at half a million. In the south there are some extremely fertile plains, producing crops of rice, cotton, tobacco, indigo, silk, and grain. The interior and north are mountainous, and flocks and herds maintain their inhabitants. Trade is chiefly carried on with Bagdad and Bussorah. Dizful and Shuster are the chief towns.

Khyber (khī'bér), or KHAIBAR, a famous pass in the north-east corner of Afghanistan, the chief gate to that country from Peshawur, by means of which India has been invaded from time to time, and the scene of severe conflicts in the recent Afghan war. Its position renders it of the greatest importance to British India, and it is now under the jurisdiction of the lieut.-governor of the Punjab. It is 3373 feet above sea-level, about 50 miles long, and inclosed on each side by precipices from 600 to 1200 feet high.

Khyerpur, or KHYRPUR (khīr-pör'), a town of Sindh, 15 miles east of the Indus and 150 miles N. of Hyderabad. Pop. about 10,000.

Khyrabad (khī-rä-bäd'), a town of India, in Oudh, with numerous mosques and Hindu temples, and large fairs. Pop. 14,217.

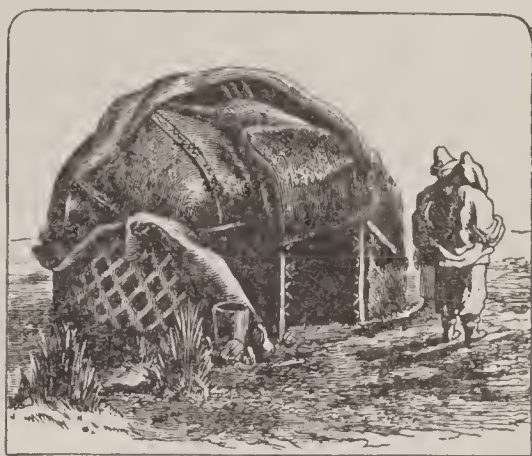
Kiaboo'ka Wood. Same as *Amboyne Wood*.

Kiachta (ki-ah'tà), a town of Siberia, in the province of Transbaikalia, on the river Kiachta, which forms the boundary between China and Russia. It formerly monopolized the overland trade between Russia and China, and the importation of tea still forms its chief commerce. Pop., including east Kiachta, 10,327.

Kiang-si, one of the central provinces of China; area, 72,176 sq. miles; pop. 24,534,118. It is profusely watered by numerous streams, and the greatest portion of the soil is highly productive, especially in rice and sugar. The province manufactures paper, cotton and silk goods, and is celebrated for its porcelain. Its chief port is Kew-Kiang.

Kiang-su, the richest of the central provs. of China; area, 44,500 square miles; pop. 20,905,171. Its products of nature and art excel those of almost any other province, while the inhabitants are of the most intelligent in the whole empire. The cities contain the finest specimens of Chinese architecture and decoration; the rice, wheat, cotton, silk, and green tea produced are of the best, and the satins, cotton cloths, ink, and paper manufactured are unsurpassed. The chief port is Nanking.

Kibit'ka, a tent of the nomad tribes of the Kirghiz Tartars. The frame consists of twelve stakes, each 5½ feet high, set up in a circle 12 feet in diameter, on which is laid



Kibitka or Kirghiz Tent.—From Zaleski.

a wheel-shaped roof-frame, consisting also of twelve stakes, united at one extremity but free at the other, so that the stakes radiate like spokes. The whole is covered with thick cloth made of sheep's wool, with the exception of an aperture in the centre for the escape of smoke. The door is formed by the removal of a stake.—The name is also given to a carriage, generally without springs, used by all classes in Russia, and which is covered by some kind of cover to afford protection from the weather.

Kidd, WILLIAM, a celebrated pirate, known as Captain Kidd, born about the middle of the 17th century, and originally a ship-master of New York. In 1696 he was appointed captain of the ship *Adventure Galley* of thirty guns by William III., for the suppression of piracy. In America he collected some 150 recruits, sailed for the East Indies; took to pirating in the Indian Ocean, and returned with his booty to New York in 1698. He was arrested and arraigned in England for piracy; but the charge could not be brought home to him; he was then tried for the murder of one of his crew, sen-

tenced, and hanged. The myth that he buried immense treasure on the shores of Long Island Sound, or the banks of the Hudson River, gave rise to one of Edgar Allen Poe's tales.

Kidderminster, a parliamentary and municipal borough and market town of England, county Worcester, on the banks of the Stour. Kidderminster is famed for the manufacture of carpets, rugs, and tapestry, which forms the staple industry of the place. Various other woollen fabrics are also made; and there are several extensive worsted spinning mills and dye-works, also iron-foundries, tin-plate works, flour-mills, tanneries, and breweries. Kidderminster returns one member to the House of Commons. Pop. 1891, 26,905.

Kidnapping, the act of getting forcible and illegal possession of the person, an offence of varied degree, but always punishable by fine or imprisonment. In its more modern and limited sense, it is applied to the obtaining of slaves or native labour by force, as practised by the Arabs in Africa. This barbarous traffic existed in very recent years in the South Seas, carried on by Europeans, but now happily suppressed by the appointment of Government Labour Agents. In Great Britain this term was formerly also applied to the illegitimate recruiting for the army and navy.

Kidney-beans. See *French Beans*.

Kidneys, two of the abdominal viscera, in the form of two glands, the function of which is to secrete the urine from the blood. They are situated one on each side of the vertebral column at the back part of the abdominal cavity on a level with the last dorsal and two upper lumbar vertebræ. The right kidney lies at a slightly lower level than the left. They are of the well-known 'kidney-bean' shape. The concave side of each kidney is turned inwards and towards the spine. The depression on the inner side is termed the *hilum*, and from this notch the excretory duct or *ureter* proceeds, whilst the blood-vessels of the kidney enter and leave the gland at this point. The weight of each male kidney is about 5 oz., those of the female weigh each somewhat less. Each gland is covered by a thin sheath of fibrous tissue, which has no extension into the substance of the organ. The internal substance is divided into an outer deeper-coloured *cortical* portion or *cortex*, and an inner lighter-coloured or *medullary* portion. Both portions consist of tubes (*tubuli uriniferi*), which

run a very tortuous course in the cortex, but continue as straight tubes in the medulla. The latter is formed into a series of conical fleshy masses, about twelve in number, called *pyramids of Malpighi*. These project into a cavity formed at the hilum by the expansion of the excretory duct, and called the *pelvis* of the kidney.

Prolongations of the expanded ureter, called the *calyces*, invest the apices of the pyramids and dip in between them like funnel-shaped tubes. Now in the cortex the end of a tubule is dilated into a sac or capsule; into this a small branch of the renal artery enters, and then breaks up into a tuft of capillary blood-vessels. This tuft is called the *glomerulus*, and it and its capsule form a *Malpighian corpuscle*, about $\frac{1}{120}$ th of an inch in diameter. So that a tubule, beginning at its dilated

end, runs a tortuous course in the cortex, reaching the medulla becomes straight, and finally opens into the pelvis on the apex of a pyramid. The blood-vessels of the kidney consist of the *renal artery*, derived from the aorta, and the *renal vein*. The branches of the artery enter the gland at the hilum, and pass into the substance of the gland between the papillæ. Finally they reach the cortical portion, and therein subdivide into the minute vessels, which form the *glomeruli* of the Malpighian bodies. The renal veins leave the kidney also at the hilum, and pour their contents into the great main vein of the lower parts of the body (*vena cava inferior*). The nervous supply of the kidney is derived from the renal plexus, and from the solar plexus or large sympathetic mass of the abdomen. The separation from the blood of the constituents of the *urine* is accomplished in the glomeruli, and by the uriniferous tubules, the former straining off the watery parts of the blood, whilst the latter remove the more solid matters. Gradually, the secreted urine passes through the tubules, into the pelvis of the kidney, thence into the ureters, which in turn open into the bladder behind its



Section of Human Kidney.

a, Supra-renal capsule, resting above the kidney. *b*, Cortex or cortical portion of kidney. *c*, Medullary portion, consisting of cones. *d*, Apices of the pyramids, projecting into their corresponding calyces *eee*. *f*, Pelvis. *g*, Ureter.

orifice or neck. The urine is constantly entering the bladder drop by drop.

Inflammation of the kidneys is known as *nephritis*. Occasionally concretions of mineral substances accumulate in the kidney, and cause, in their passage from the gland and through the ureter, most excruciating pain.

Kidney-vetch, *Anthyllis*, a genus of plants, natural order *Leguminosæ*. There are many species, both shrubby and herbaceous, but the variety found in Great Britain, chiefly on very dry soils, is the *Anthyllis vulneraria*, commonly called Lady's Fingers, with pinnate unequal leaves, and heads of flowers generally yellow, sometimes graduating towards scarlet.

Kief. See *Kiev*.

Kiekie, *Freycinetia Banksii*, a climbing shrub indigenous to the northern part of New Zealand where it grows luxuriantly on lofty trees, and yields an edible, fleshy berry.

Kiel (kēl), a town of Prussia, in Schleswig-Holstein, beautifully situated on a deep bay of the Baltic, 54 miles north by east from

part of the imperial fleet, Kiel is rapidly rising in importance. Besides ship-building, it has iron-foundries, engineering works, oil-mills, tan-works, tobacco-works, &c. A great ship-canal is now being made to connect it with the Elbe. Pop. 51,706.

Kielce (ki-el'tse), a government and town in Russian Poland; area of the former 3897 sq. miles, pop. 661,267. It is watered by tributaries of the Vistula, and partly covered by offsets of the Carpathians. There are some iron and sugar factories, rapidly growing in importance, especially since the coal-fields of the province have been opened.—The capital, KIELCE, is an ancient town about 50 miles north-east of Cracow. Pop. 12,219.

Kiepert (ke'pért), HEINRICH, a German geographer, born at Berlin, 1818, where he studied history and geography under Ritter. In 1845 he became director of the Geographical Institute of Weimar, and in 1859 professor of geography at the University of Berlin. His services were secured for the Berlin Statistical Bureau in 1865. He has published numerous maps, much esteemed for their accuracy.

Kieserite (kē'zér-īt), Mg. $\text{SO}_4\text{H}_2\text{O}$, a sulphate of magnesia obtained at Stassfurt and elsewhere, and employed as a source of epsom salt, and in the manufacture of manures. Mixed with quicklime and water it hardens into a mass which, after heating, pulverizing, and again mixing with water, becomes of a marble-like consistency, and may be made into ornamental articles, &c.

Kiev (ki-ev') or KIEFF (ki-ef'), a government of s.w. Russia; area, 19,691 sq. miles; pop. 2,492,112. The surface is in general flat, intersected occasionally by hills of moderate elevation along the course of the Dnieper and other streams. The Dnieper is the only stream navigable to any extent. The climate is mild, the summer very hot and dry. The manufacture of beet-sugar has made rapid strides in recent years, and the province is now the largest producer of that article in the empire.—KIEFF, the capital, is picturesquely situated on the right bank of the Dnieper, which is here navigable, and crossed by a suspension bridge half a mile in length, one of the finest in Europe. Kieff really consists of three towns, all more or less strongly fortified, and is the seat of the governor-general of the provinces Kieff, Podolsk, and Volhynia. Its university is one of the most important of the empire. The connection by rail with Odessa and



Hamburg. The most notable buildings are the university, and the royal palace (containing the university library). As a fortified naval port of Germany, with an imperial dockyard, and as the station of the greater

Kursk has done much to stimulate the trade of the town. Pop. 1891, 183,640.

Kilauea, an active volcano in Hawaii, one of the Sandwich Islands. It has an oval crater, 9 miles in circumference, with a lake of red and boiling lava at the bottom, over 1000 feet below the crater's mouth.

Kilda, Str., a small and rocky island in the Atlantic Ocean,, belonging to Scotland, 40 miles north-west from the north-west extremity of the island of N. Uist. It is about 3 miles long by 2 broad, a great portion of its sea-front being composed of perpendicular precipices, which in some parts rise to a height of many hundred feet. The only hamlet lies at the head of East Bay, containing some thirty houses of modern construction. In the interior there is sufficient pasture for a limited number of cows and sheep; patches of potatoes, oats, and bere are grown, and together with fish and sea-fowl, supply the inhabitants with food. In bad seasons, the lot of the inhabitants—about seventy in number and speaking Gaelic—has often been one of privation, but more regular intercourse with, and philanthropic aid from the mainland, have much improved their domestic comfort, and religion and education are also adequately provided for. In the summer months the island is now frequently visited by tourists.

Kildare', an inland county of Ireland, in the province of Leinster; length, 40 miles; breadth, 27 miles; area, 418,496 acres. The surface is flat, or gently undulating, the soil mostly a rich loam. Oats, potatoes, barley, and turnips are the principal crops. The manufacture of woollens is carried on to some extent, but the chief occupations are agricultural. Principal rivers—Barrow, Liffey, and Boyne. Chief towns—Naas (the county town), Athy, and Newbridge. Kildare returns two members to parliament. Pop. 69,998.—The town of KILDARE stands on an eminence 30 miles s.w. from Dublin. Near it is the common known as the 'Curragh of Kildare,' 4858 acres, the property of the crown, on which a permanent military camp has been formed. Pop. 1174.

Kil'derkin, a liquid measure of 18 gallons, a term now almost exclusively used by brewers to denote a half-barrel.

Kil'ia, a seaport of Roumania on the Kilia arm of the Danube. It is fortified, and has a good trade. Pop. 7221.

Kil'ima-njaro (the Great Mountain), a double-peaked, snow-clad mountain of Africa, in the territory of the German East

African Company, about 100 miles inland from the port of Mombasa, on the Suaheli coast. The highest peak, estimated at 18,881 feet, is the highest known in the African continent.

Kilkee', a bathing place on the west coast of Ireland, county Clare. Pop. 1652.

Kilken'ny, a city, parliamentary borough, and county of itself, in Ireland, locally in Kilkenny county, of which it is the capital, 73 miles s.w. from Dublin, delightfully situated on both sides of the Nore. The city contains several interesting ancient edifices, which give it a venerable and picturesque appearance. The manufacture of coarse woollens, brewing, and the working of Kilkenny black and foreign marbles into chimney-pieces, monuments, &c., form the chief industries of the town. Kilkenny returns one member to parliament. Pop. 11,024.—The county, which is in the province of Leinster has an area of 796 sq. miles. The surface is generally level. The principal rivers are the Barrow, Nore, and Suir. The soil is for the most part light and dry, some valleys being extremely fertile, and dairying is carried on extensively. The chief crops are wheat, oats, barley, potatoes, and turnips. Beds of fine black marble are quarried near the town of Kilkenny, and anthracite coal is raised chiefly for local consumption. The county returns two members to parliament. Pop. 1891, 87,154.

Killar'ney, a market town of Ireland, in the county of Kerry, in the midst of beautiful scenery, within a mile of the celebrated lakes to which it gives its name. These lakes are three in number, the lower 4½ miles long by 2 broad, the middle 1½ miles long and ½ broad, the upper 3 miles long. They are interspersed with wooded islands, and the lofty banks are also richly wooded. In summer Killarney is thronged with visitors. Pop. 6651.

Kildeer (*Charadrius vociferus*), a variety of plover, common in America, and so called from its plaintive cry.

Killiecran'kie, a pass of Scotland, in the Grampians of northern Perthshire, above the river Garry, and on the Highland Railway. Here Claverhouse, Viscount Dundee, defeated the forces of William III.

Killingly, Windham co., Conn., 5 m. s. of Putnam. Pop. 1890, 7027.

Kilmain'ham, a western suburb of Dublin, Ireland, between the Liffey and the Grand Canal. It is chiefly known for its Royal Hospital and its county jail. The

Royal Hospital is a retreat for invalided soldiers, and is supported by an annual state grant.

Kilmar'nock, a parliamentary and municipal burgh of Scotland, in the county of Ayr, 19 miles s.w. from Glasgow. It has long been famed for the excellence of its woollen manufactures, especially carpets, but machinery, hats, hosiery, leather, boots, &c., are also produced in increasing quantities. It is a rapidly improving town, and has many fine buildings, both public and private. Pop. 1891, 27,959.

Kiln, a structure of brick or stone used for drying, baking, burning, annealing and calcining various substances and articles, such as corn, hops, malt, cement, limestone, iron ore, glass, bricks, pottery, &c. The construction of kilns naturally varies with the special object for which they are designed, but the same principle is involved in all, that is, the generation of ample and regular heat with the least expenditure of fuel.

Kilogramme, a French weight containing 1000 grammes = 2·2 lbs. Similarly *kilomètre* = 1000 mètres or 0·621 mile. See *Metrical System*.

Kilogrammètre, a unit employed in the measurement of mechanical work; it is the mechanical work expended in raising a body whose weight is 1 kilogramme (2·2046 lbs.) through the vertical height of 1 metre (3·2809 feet), and is equal to 7·233 foot-pounds. See *Foot-pound*.

Kilrush', a market town and seaport of Ireland, county Clare, on the north shore of the estuary of the Shannon. The manufacture of woollen and linen cloth is carried on to some extent. The town is much resorted to for sea-bathing. Pop. 3805.

Kilsyth', a town and police burgh of Scotland, in Stirlingshire, 12 miles N.E. from Glasgow. The inhabitants are employed in iron and coal mining. Pop. 5405.

Kilwin'ning, a town of Scotland, in Ayrshire, 21 miles s.w. Glasgow. Pop. 3469.

Kim'berley, the capital of Griqualand West, Cape Colony, and the centre of the South African diamond fields. It is connected by rail with Port Elizabeth and Cape Town, and its commerce is rapidly increasing. It lies on an open plain, has broad streets, and is well equipped with all modern requirements of life. There are four chief mines here—Kimberley, Dutoitspan, De Beer's, and Bultfontein. Pop. 25,000.

Kimberley, a northern district of Western Australia, brought into notice by the discovery of gold-fields in 1886. It contains immense tracts of splendid pasture, and much land suitable for the cultivation of wheat, sugar, tobacco, &c. The chief port for the district is Derby, on the Fitzroy river.

Kimchi (kim'hē), DAVID, one of the most famous Jewish rabbis of the middle ages, born towards the end of the 12th century at Narbonne, died 1240. He wrote commentaries on almost all the books of the Old Testament, and rendered essential service to Hebrew literature by the composition of his Grammar and Dictionary of Hebrew Roots. His father Joseph and his brother Moses also distinguished themselves as Hebrew scholars and theologians.

Kimmeridge Clay, a bluish slaty clay, containing some carbonate and sulphate of lime, found in thick deposits in the south of England (Kimmeridge in Dorsetshire) and the north of France. It is a member of the Upper Oolite.

Kin. See *Descent*.

Kincard'ineshire, or THE MEARNs, a maritime county on the east coast of Scotland; area, 248,284 acres. About half the county consists of cultivated land, woodland, improvable moor, &c. The Grampian Mountains, by which it is traversed north-east to south-west, occupy a large portion of its surface, their highest summit within the county being Battock, 2555 feet above sea-level. The principal rivers are the North Esk, Bervie, Carron, Cowie, and Dee. The most fertile portion is the Howe (that is hollow) of the Mearns, between the Grampians and a range of low coast hills. The principal crops are oats, barley, wheat, turnips, and potatoes. Kincardineshire sends one member to parliament. Stonehaven is the county town. Pop. 1891, 35,647.

Kin'dergarten, a German word signifying 'children's garden,' and the name given to a system of infant education introduced by Friedrich Froebel, who was largely assisted in its propagation by the Baroness Marenholz-Bülow. The system is intended to bring out the moral and intellectual capabilities of very young children chiefly by observation; pictures, toys, tools, &c., suitable for the purpose, being introduced, so as to convert schooling into play, which according to Froebel is the child's most serious business. The first kindergarten was opened in 1840 at Blankenburg (Prussia),

and like most other innovations met at first with little encouragement, and even with opposition, but it gradually gained a footing in the best educated countries, and the progress in recent years has been great and rapid. Froebel Societies for the training of teachers exist now in various countries. The system is most widely spread in the United States and Belgium, while Switzerland, France, and Austria are grafting it on their elementary schools.

Kinemat'ics, a branch of mathematics which treats of the motions of bodies independently of the forces which produce them.

Kinet'ics, that branch of the science of dynamics which treats of forces causing motion in bodies. See *Dynamics*.

King (Anglo-Saxon, *cynning*, *cynig*, *cynig*), a person invested with supreme power over a state, nation, or people, whether this power be acquired by inheritance, election, or otherwise. It is difficult to define what essentially constitutes a king, or to say in what he differs from an emperor.

King-bird. See *Tyrant fly-catcher*.

King-crab (*Limulus*), a peculiar genus of crabs included in the order Xiphosura (sword-tailed), of the class Crustacea. They are found on the coasts of northern and tropical America and the Antilles, in the Eastern Archipelago and Japan. The head resembles a broad horse-shoe shaped shield, with two pairs of eyes upon the upper surface, the second pair being the larger and forming the true visual organs. The mouth opens on the lower surface, and around it are six pairs of limbs with spinous joints attached. A second shield somewhat hexagonal in shape covers the abdominal part, and beneath it are the gills, or *branchiæ*, borne upon five pairs of appendages which represent the abdominal feet of the crab. The average length is about 2 feet. These crabs are destitute of swimming powers, and if placed on their backs they appear, like turtle, unable to recover their natural position. The commonest species is the *Limulus polyphēmus*, found chiefly on the North American coasts. The upper surface of the tail, as in other species, bears numerous spines. The *Limulus moluccānus*, of the Moluccas, possesses a strongly serrated tail. This latter species is largely eaten.



King-crab (*Limulus polyphēmus*).

Kingfisher, the name of a family of Insectorial birds distinguished by the elongated, stoutly formed, tetragonal bill, broad at the base, and terminating in a finely acute point;



Spotted Kingfisher (*Certhle guttata*).

tarsi short, feet strong, toes somewhat elongated. The common kingfisher, found in Great Britain (*Alcedo ispida*), has the upper part of the head, the sides of the neck, and the coverts of the wings green, spotted with blue. The back is dark green in colour, the lower back and rump being of a bright blue. The throat is white, and the under surface of the body a pale-brown colour. It frequents the banks of rivers, and, perched on the bough of a tree, watches for fish. When the prey is perceived it dives into the water, secures the fish with its feet, and carries it to land, where it kills the prey and swallows it entire. It is about 7 inches in length. This bird has been greatly celebrated in ancient poetic and legendary lore, and is the subject of many superstitions. The American kingfisher (*Alcedo* or *Certhle alcyon*) is of a bluish-slate colour, with an iron-coloured band on the breast, whilst the head bears a crest of feathers. The spotted kingfisher (*Certhle guttata*) is a native of the Himalayas, where it is called the fish-tiger. A large Australian species is known as the laughing-jackass (which see).

Kinglake, ALEXANDER WILLIAM, an English historian, born 1811, and educated at Eton and Cambridge. He was called to the bar in 1837, but abandoned law in 1856. He first made his mark in 1844 by the publication of *Eöthen*, a narrative of eastern travel. In 1857 he entered the House of Commons as member for Bridgewater, and took an active part in opposing several important bills of that period. The first volume of his *Invasion of the Crimea* appeared in 1863, and at once established his reputation as a bril-

liant historian; seven volumes followed at intervals, the eighth and completing volume in 1887, and they form together a magnificent record of this war. Died in 1891.

Kinglet. See *Golden-crested Wren*.

King of (or AT) Arms, in England, an officer whose business is to direct the heralds, preside at their chapters, and have the jurisdiction of arms. There are three kings of arms in England—Garter, Clarenceux, Norroy, and an officer styled Bath King of Arms, attached to the order of the Bath. There are also Lion King at Arms for Scotland, and Ulster King of Arms for Ireland.

King of the Herrings, the popular name of the *Chimæra monstrosa*, or Arctic chimæra, a fish also known in certain localities by the name of 'Sea-cat.' See *Chimæra*.

Kings, BOOKS OF, form two books in the English and one book in the Hebrew canon of the Old Testament. Besides their own unity the books of Kings are closely connected with first and second of Samuel, and, following these, form the third and fourth in what is known as the four books of the kingdom. From internal evidence it would seem that these were written by a series of contemporary authorities, with additions and glosses made by a later writer. The history, as related in the books of Kings, begins with the close of David's reign, and carries the events onwards to the capture of Jerusalem and the destruction of the temple. This embraces, according to the received chronology, a period of upwards of 400 years (B.C. 1015–588), and includes the history of both the kingdoms of Judah and Israel. This chronology, however, is unsatisfactory, and has been much disputed. In comparing these books with the Chronicles it is found that while the former describes the divided kingdom of Israel and Judah, the latter is occupied almost exclusively with Judah; and further, that the books of Kings seem to have been compiled under prophetic, and the Chronicles under priestly influence.

King's Advocate. See *Advocate*.

King's Bench. See *Queen's Bench*.

King's-clover, an English name of the *Melilotus officinalis*; called also the *Common* or *Yellow Melilot*.

King's College, one of the colleges of Cambridge University, founded by King Henry VI. in 1441.

King's College, London, a proprietary institution incorporated in 1829, and reincorporated in 1882. It was established for the purpose of providing education in accor-

dance with the principles of the Church of England, and gives instruction in theology, general literature, science, engineering, and medicine; there being also a special civil service department, a ladies' department, evening classes, and a school giving a preparatory education for the college classes. Students of a certain standing receive the diploma of 'Associate.'

King's Counsel. See *Queen's Counsel*.

King's County, an inland county, Ireland, province of Leinster; area, 493,985 acres, of which 351,495 are arable. A large portion of the N. and N.E. part is covered with the Bog of Allen, and of the S. with the Slieve Bloom Mountains. Limestone occurs in the N.W., and has been quarried. The soil is in some places very rich, but in others it is light and gravelly; at an average, it may be reckoned of a medium degree of fertility. The principal produce is oats, wheat, and potatoes, with no manufactures. King's county returns two members to parliament. The county town is Tullamore. Pop. 1891, 65,408.

King's Evidence. See *Approver*.

King's-evil. See *Scrofula*.

Kingsley, HENRY, novelist, and brother of Charles Kingsley, was born in 1830, and died 1876. Educated at King's College, London, and Worcester College, Oxford, he left England to become an Australian colonist in 1858. On his return he contributed largely to magazines and reviews. Of the novels which he published between 1859 and 1874 Geoffrey Hamlyn was the first, while Ravenshoe and Austin Elliott are considered the best. He was also for a short time editor of the *Edinburgh Daily Review*.

Kingsley, REV. CHARLES, English clergyman, novelist and poet, born in 1819, died 1875. He was educated at King's College, London, and afterwards at Magdalen College, Cambridge, where he took his degree in 1842. He was subsequently appointed curate of Eversley, in Hampshire, and published a volume of twenty-five Village Sermons, which became popular. In 1848 he published a poem, *The Saints' Tragedy*. This was followed in 1849 by the novel *Alton Locke*, in which his opinions of the social and economic questions of the time are powerfully expressed. Upon the same lines, but dealing with the subject from the agricultural side, followed his novel of *Yeast* in 1851. In 1853 was published *Hypatia*, and in 1855 *Westward Ho*, both brilliant

historical novels, the former dealing with the early Christian church, the latter with the South American adventurers of the Elizabethan era. Among his other well-known works are *Two Years Ago*, *Hereward the Last of the English*, *Glaucus*, and *The Water Babies*. He was appointed professor of modern history at Cambridge in 1859, and canon of Chester in 1869. His *Letters and Memories of his Life*, edited by his wife, was published in 1877.

King's Lynn. See *Lynn*.

Kingston, a city of Ontario, Canada, on Navy Bay, the north-east corner of Lake Ontario, 199 miles s.w. Montreal, regularly and substantially built. There are here the Queen's University and College, a collegiate institution belonging to the Presbyterians, a mechanics' institute, an hospital, &c. The trade is very considerable, and the harbour is accessible to ships of large size. There are mineral springs in the town and neighbourhood. Kingston was founded in 1783, on the ground formerly occupied by Fort Frontenac. It was incorporated in 1838, and returns one member to the provincial parliament. Pop. 1891, 19,264.

Kingston, the capital of the island of Jamaica, on the south coast, with straight and regular streets and houses, generally of brick. The principal public buildings are the English and Scotch churches, hospital, court-house, theatre, penitentiary, barracks, and jail. The harbour, which is 6 miles long by 2 miles wide, is separated from the sea by a narrow slip of low land, and forms an excellent anchorage for vessels of any size. It is defended by several forts. Pop. 1891, 46,542.

Kingston, a city of the U. States, N. York State, 90 miles north of New York, on the Hudson, by which and by railroad and canal it carries on a large trade. It has carriage factories, iron-foundries and machine shops, cement manufactory, &c. Pop. 1890, 21,261.

Kingston-on-Hull. See *Hull*.

Kingston-upon-Thames, a town of England, county of Surrey, on the right bank of the Thames, 12 miles from Hyde Park Corner. Its antiquity is proved by numerous

Roman remains found in its vicinity, and the Saxon kings were crowned here from Edward the Elder to Ethelred II. The stone on which the kings were crowned is preserved within an iron inclosure near the market-place. In the neighbourhood are Bushy and Richmond parks, and Hampton Court Palace. Pop. 1891, 27,059.

Kingstown, a seaport of Ireland, on the south shore of Dublin Bay, 6 miles s.e. of Dublin. Its most interesting object is its magnificent harbour, commenced in 1816 and finished in 1859 at a cost of £825,000. There are two piers, inclosing an area of 250 acres, with a depth varying from 15 to 27 feet. Kingstown has regular steam communication with Holyhead, in North Wales, and is visited annually by 1600 to 1800 vessels. It is much frequented for sea-bathing. Pop. 1891, 17,340.

King's-yellow, a pigment, the basis of which is orpiment or tersulphide of arsenic.

King-vulture, the *Sarcophagus Papa* of the intertropical regions of America. It is about 2½ feet in length, and upwards of 5 feet across the expanded wings. The other vultures are said to stand quietly by until this, their monarch, has finished his repast.



King-wood, a Brazilian wood believed to be derived from a leguminous tree, a species of *Triptolema*, but by some referred to *Brya ebēnus*. It is beautifully streaked with violet tints or West Indian ebony, and is used in turning and small cabinet-work. Called also *Violet-wood*.

Kink'ajou (*Cercoptes caudivolvulus*), a plantigrade carnivorous mammal of northern South America, allied to the bear family. In habits it is omnivorous, nocturnal, and do-



Kinkajou (*Cercoptes caudivolvulus*).

cile when captured. In shape it resembles the lemur, the legs are short, fur close and woolly, tail long and prehensile. Being fond of honey they make frequent forays upon the nests of bees.

Kino, an astringent extract, resembling catechu, obtained from various trees. The original is procured from *Pterocarpus Marsupium*, a handsome East Indian tree, nat. order Leguminosæ, which yields a valuable timber. Kino is the juice of the tree dried without artificial heat. African or Gambia kino is obtained from another species (*P. erinaceus*), a native of tropical Western Africa. Dhak-tree or Bengal kino is the product of *Butea frondosa*; while Botany Bay kino is got from various species of Eucalyptus. Kino consists of tannin, gum, and extractive, and is a powerful astringent.

Kinross', a small inland county of Scotland, west of Fife, and entirely surrounded by that county and Perthshire; area, 49,812 acres. It forms a level plain, inclosed by the Ochil Hills in the N.W., the Lomond Hills in the E., Benarty Hill in the S., and the Cleish Hills in the S.W. Loch Leven is in the centre of this plain. The geological formations are freestone, basalt, limestone, and coal in the south. Kinross-shire and Clackmannanshire unite to return one member to parliament. Pop. 6289.—There is a small town of the same name in the county.

Kinsale', a seaport town of Ireland, in the county and 14 miles south of Cork, near the mouth of the Bandon, which here

forms a magnificent harbour. The exports consist chiefly of farm produce, and its fishery is good. It sent one member to parliament till 1885. Pop. 5998.

Kintyre. See *Cantyre*.

Kiosk', a Turkish word signifying a kind of open pavilion or summer house, generally constructed of wood, straw, or other light materials, and supported by pillars. It has been introduced from Turkey and Persia into the gardens, parks, &c., of Western Europe.

Kio'to, or **SAIKIO**, a large city of Japan, in the island of Hondo, in an extensive plain 250 miles south-west of Yeddo, connected by railway with its port, Osaka, and some 6 miles from Lake Biwa. It was formerly the special residence of the Mikado, and the seat of his *dairi* or court, and hence the ecclesiastical capital of the empire. It is about 4 miles long and 3 miles broad, and abounds in exquisitely laid-out gardens, palaces, and temples. It is the centre of learning, and of artistic manufactures, such as carved ivory ornaments, lacquered ware, bronze ornaments, brocaded and embroidered silks, &c. Pop. 1891, 289,588.

Kiptchaks, or **KAPTCHAKS**, the name given to a Tartar or Mongolian race. They were known as the Golden Horde, and founded a Khanate about the 13th century, and their territory comprised the region watered by the Dnieper, Don, Volga, and Ural.

Kiratpur (kē-rat-pör'), a town of India, Bijnor district, N.W. Provinces. Pop. 12,728.

Kirby, **REV. WILLIAM**, a distinguished entomologist, born 1759, died 1850. He was educated at Ipswich, and at Caius College, Cambridge, and was appointed rector of Barham in 1796. Here his early love of natural history was developed, and on the establishment of the Linnæan Society in 1788 he was one of its first members. In 1802 appeared his work on English Bees, entitled *Monographia Apum Angliæ*, which established for him a European reputation. A few years afterwards he formed a literary copartnery with Mr. Spence, and the result was the publication, in 1815, of the first volume of Kirby and Spence's *Introduction to Entomology*, of which the second volume appeared in 1817, and the third and fourth in 1826. It gives in the form of letters a familiar description of insects in all their phases as regards species, food, habits, and qualities, beneficial or destructive. In 1830

Mr. Kirby was appointed to write one of the Bridgewater Treatises (which see), and he accordingly produced his *Habits and Instincts of Animals with reference to Natural Theology*. He wrote a description of the Arctic insects for Captain Parry's Voyage, and also for Sir John Richardson's *Fauna Boreali-Americana*.

Kircher (kir'h'ër), ATHANASIUS, a learned German Jesuit, born 1602, died 1680. He was professor of mathematics, philosophy, and the oriental languages at Würzburg, but the pope called him to Rome, where he at first taught mathematics in the Collegium Romanum, afterwards occupied himself in the study of the Egyptian hieroglyphics, and subsequently became professor of Hebrew and mathematics. Father Kircher was a good orientalist, and his industry as a writer was unwearied, the whole of his works occupying no fewer than twenty volumes in folio, eleven in quarto, and three in octavo. Among these are his *Œdipus Ægyptiacus*, *Prodromus Coptus*, *Lingua Ægyptiaca restituta*, *Mundus Subterraneus*.

Kirchhoff (kir'h'hof), GUSTAV ROBERT, German physicist, born in 1824. He was appointed professor of physics in the University of Heidelberg in 1854. He has devoted his attention to the subjects of heat, elasticity, and magnetism. Conjointly with Bunsen he discovered the spectroscope.

Kirghiz, KIRGHIS (kir'gēz), a nomadic Mongol-Tartar race, numbering in its various branches about 3,000,000, and inhabiting the steppes that extend from the lower Volga and the Caspian Sea in the west to the Altai and Thian-Shan Mountains in the east, and from the Sea of Aral and the Syr Daria in the south to the Tobol and Irtish on the north. The Kirghiz are a slow, sullen people, small in stature, bad walkers, but born riders. Their food is chiefly mutton and horseflesh, and their drink the nourishing fermented mare's milk called *koumiss*. They dwell in a *yurt* or semi-circular tent, the wooden framework of which is covered with cloth or felt. Agriculture is almost unknown; their possessions are in sheep, horses, and camels, and their manufactures consist of cloth, felt, carpets, leather, &c. They profess Mohammedanism. Most of the varied Kirghiz tribes are, at least nominally, under Russian government.

Kirin, a division or province and town of the Chinese territory Manchuria. The town, also called Kirinoola or Girin, has a pop. of 120,000. See *Manchuria*.

Kirkcaldy (kir-ká'di), known as the 'Lang Toun,' a royal and parliamentary burgh and seaport, Scotland, county of Fife, on the north shore of the Firth of Forth. It consists principally of one long irregular street, which, including suburbs, extends for about 3 miles west to east. It has numerous flax-spinning mills, linen and damask factories, sailcloth and net factories, roperies, machine-factories, &c., and the largest linoleum and floor-cloth works in the world. The harbour is obstructed by a sandbank at its mouth, and is dry at ebb-tide. The foreign trade is with the Baltic and the north of Russia. Kirkcaldy, together with Burntisland, Dysart, and Kinghorn (the Kirkcaldy district of burghs), sends one member to parliament. Adam Smith, author of the *Wealth of Nations*, was born here. Pop. of royal burgh, 1891, 27,151; parl. burgh, 17,324.

Kirkcudbright (kir-kö'bri), STEWARTRY OF, a maritime county, in the south of Scotland; bounded north by county Ayr, west by Wigtown, north and east by Dumfries, and south by the Solway Firth and Wigtown Bay; area, 582,982 acres, of which above one-fourth is reckoned arable. The coast line, generally precipitous, is considerably indented. There are extensive mountainous districts; the rivers include the Dee and the Urr; and there are numerous lakes, the largest of which is Loch Ken. Granite is quarried in several districts, while lead, copper, and iron have been found. The soil and climate are most suitable for green crops, and great attention is given to the rearing of cattle for the English markets. The county returns one member to parliament. It forms with Wigtownshire the district known as Galloway. The principal towns are Kirkcudbright (the county town), Dalbeattie, and Castle-Douglas. Pop. 39,979. —The county town is a royal burgh, and port on the Dee, 25 miles south-west of Dumfries, a clean, well-built place. It is one of the Dumfries district of burghs. Pop. 2571.

Kirkintil'loch, a police burgh, Scotland, county of Dumbarton, 7 miles north by east of Glasgow. It has iron-foundries, cotton-factories, chemical works, and coal-mines. Pop. 7352.

Kirk-Session, the lowest or initiatory court of the Established Church of Scotland. It consists of an ordained minister, generally the incumbent, who presides under the name of moderator, and the elders of the congregation, of whom two must be

present to form a quorum. It takes cognizance of matters spiritual and of general ecclesiastical discipline within the congregation. Other Presbyterian churches have a court of the same nature.

Kirk'wall, a royal and parliamentary burgh and seaport, Scotland, capital of the county of Orkney, on a bay on the east side of the island of Pomona or Mainland. The principal edifices are the old cathedral of St. Magnus (founded in 1137), the choir of which has long been used as the parish church; the old castle of the earls of Orkney, the ruins of the bishop's palace, in which King Hako died; and the town and county buildings. The harbour is secure and commodious. Kirkwall unites with Wick, &c., in sending a member to parliament. Pop. 3947.

Kirman. See *Kerman*.

Kirmanshah. See *Kermanshah*.

Kirschwasser (kirsh'väs-ër), a liqueur distilled in Germany and Switzerland from the fermented juice of the small black cherry.

Kis'faludy, ALEXANDER, a Hungarian poet, was born in 1772, died in 1844. In 1793 he entered the Austrian army as a cadet, and made campaigns in Germany and Italy. During a residence in Vienna, as a member of the royal Hungarian body-guard, he devoted himself to the translating of Tasso into Hungarian. In 1801 he left the army, and employed himself almost exclusively in agriculture and in literary pursuits. His principal lyrical work, *Himfy Szerelmei* (Himfy's Love-songs), gave him a first place among his native poets. He afterwards wrote the historical dramas *John Hunniades* and *Ladislaus the Cumanian*. His brother Charles, who almost equalled him in literature, died in 1830.

Kish'inev, or KISHENAU, a town of Russia, capital of the government of Bessarabia, on the Byk, a tributary of the Dniester. In 1812 only a small miserable town, it is now the seat of the civil and ecclesiastical authority, has many churches, schools, theatres, and large markets for cattle and corn. Pop. about 130,000.

Kisma'yu, a seaport on the coast of East Africa, south of the mouth of the Juba, the administration of which was conceded by the Sultan of Zanzibar to the Imperial British East Africa Company in 1889. Pop. 8000.

Kisoriganj, a town of Hindustan, in Bengal, 13 miles east of the Brahmaputra. Pop. 12,898.

Kiss, the mutual touching of the lips. With some nations, as the Germans and French, men often kiss each other after a long absence, &c. Kissing the hand of the sovereign forms part of the ceremonial of all European courts. Kissing the foot is a common oriental sign of respect, and the popes have required it as a sign of respect from the secular power since the 8th century. When this ceremony takes place the pope wears a slipper with a cross, which is kissed.

Kissingen (kis'ing-en), a watering-place of Bavaria, on the Saale, 30 miles north of Würzburg. The springs, five in number, and all saline, contain a large quantity of carbonic acid gas, and are used both internally and as baths. Besides 13,000 visitors annually attracted by the baths, about 500,000 bottles of water are annually exported. A complete course of water-drinking and bathing occupies twenty-eight days. Pop. 3873.

Kistna, or KRISHNA, a river of India, which rises among the Western Gháts, about 40 miles from the Malabar coast, and flows in a general easterly direction, partly along the frontier of Haidarabad and the Madras Presidency, and falls into the Bay of Bengal 200 miles north of Madras; length, including windings, 800 miles. It is almost useless for inland navigation.

Kit-Cat Club, an English club formed about 1688, of a political character, the resort of Marlborough, Walpole, Addison, Steele, and other leading Whigs. The name of the club was derived from that of the person (Christopher Cat) who supplied it with mutton pies. The portraits of the members were painted by Sir Godfrey Kneller, on a scale adapted to the height of the walls of the club-room, giving a portrait of about three-quarters length; hence portraits thus reduced have been called *kit-cat*.

Kitchen-garden. See *Horticulture*.

Kitchen-middens, the name given to certain mounds, from 3 to 10 feet in height and 100 to 1000 feet in length, found in Denmark, the north of Scotland, &c., consisting chiefly of the shells of oysters, cockles, and other edible shell-fish. They are the refuse heaps of a pre-historic people unacquainted with the use of metals, all the implements found in them being of stone, bone, horn, or wood. Fragments of rude pottery occur. The bones are all those of wild animals, with the exception of those of the dog. Similar shell deposits occur on the

eastern shores of the United States, formed by the Red Indians.

Kite, a raptorial bird of the falcon family, differing from the true falcons in having a somewhat long forked tail, long wings, short legs, and weak bill and talons. This last peculiarity renders it the least formidable of the birds of prey. The common kite, glead, or glede (*Milvus ictinus, regalis, vulgāris*) preys chiefly on the smaller quadrupeds, birds, young chickens, &c. It usually builds in the fork of a tree in a thick wood. The common kite of America is the *Ictinia mississippiensis*.

Kittiwake, a species of gull (*Larus tri-dactylus*), found in great abundance in all the northern parts of the world wherever the coast is high and rocky.

Kitto, JOHN, D.D., was born at Plymouth in 1804, and died at Cannstadt, in Germany, in 1854. The son of a jobbing mason, he received but a scanty education, and in his efforts to assist his father he met with a fall which deprived him of the sense of hearing. For a time he had to take refuge in the workhouse. Afterwards, having turned his attention to literature, he published a small volume of essays, which procured him patrons. He engaged in missionary work at Malta and Bagdad, but most of his life was spent in literary work. When his excessive labours had impaired his health he received a small pension from the crown. Among his leading works are The Pictorial Bible; Pictorial History of Palestine; Gallery of Scripture Engravings; Cyclopædia of Biblical Literature, edited by him.

Kitzingen (kits'ing-en), a walled town of Bavaria, 10 miles east-south-east from Würzburg, partly on the right and partly on the left bank of the Main. Pop. 7177.

Kiu-kiang. See *Kew-kiang*.

Kiung-chow, a seaport of China in the island of Formosa open to foreign trade. Pop. 40,000.

Kiu-Siu, one of the three principal islands of Japan, separated from Corea by the Strait of Corea, and from Hondo by the Strait of Sikoku. Nagasaki is situated here.

Kiwi-Kiwi. See *Apteryx*.

Kizil-Irmak (the Turkish for 'Red River'), a river known to the ancients as the Halys, the principal river of Asia Minor. Rising in the east of the peninsula, it flows in a circuitous route for about 500 miles, and enters the Black Sea near Sinope.

Kizil-Kum, an extensive sandy desert in Asia, to the south-east of Lake Aral, occu-

pying a great part of the space between the Amu Daria or Oxus and the Sir Daria, in what is now Russian territory.

Kladno, a town of Bohemia, 13 miles N.W. of Prague, with coal and iron mines, iron and steel works. Pop. 14,085.

Kla'genfurt, a town of Austria, capital of Carinthia, 40 miles north-north-east of Laibach, on the Glan. Among its public edifices are the cathedral, the town church, the bishop's palace, provincial house of assembly, town-house, &c. The manufactures consist of woollens, leather, white-lead, &c. Pop. 18,747.

Klapka, GEORGE, Hungarian general, born in 1820; educated in the artillery school in Vienna, and appointed to a command in 1847. In the Hungarian rebellion of 1848 Klapka joined the revolt as chief of the staff, and in 1849 he took command of an army corps. For the ability which he displayed he was made minister of war by Kossuth. When the Hungarians were defeated, Klapka refused to capitulate, and shut himself up in the fortress of Komorn, where he made a brilliant defence. Ultimately he surrendered under honourable conditions. He was compelled to leave the country, and so passed many of his years in exile. He wrote Memoirs of the War of Independence (1850) and The National War in Hungary and Transylvania. Died May 17, 1892.

Klaproth (klāp'rōt), JULIUS HEINRICH, German orientalist and traveller, born in 1783, died 1835. He travelled through Asia to the Chinese frontier, and also in the Caucasus. Having taken up his permanent residence in Paris in 1815, he was appointed professor of Asiatic languages, and retained this situation till his death. Among his numerous writings may be mentioned his Description of the Eastern Caucasus, Description of the Russian Provinces between the Caspian and the Black Seas, Catalogue of the Chinese and Manchu Books and MSS. in the Royal Library of Berlin, Asia Polyglotta, and Collections of Egyptian Antiquities.

Klattau (klāt'ou), a town of Bohemia, on a steep height in the beautiful and fertile valley of the Rasenbach, 73 miles S.W. Prague. It is an ancient place, and has six times been almost burned down. Pop. 9890.

Klausenburg (klou'zèn-burh; Hungarian *Kolosvár*), an Austrian town, the capital of Transylvania, situated on the Little Szamos. It has a noble cathedral in the ancient Ger-

man style, built in 1414 by King Sigismund; a town-house, Hungarian theatre, higher class gymnasia for Protestants and Catholics, a college for Unitarians, with a gymnasium; a school of surgery, &c. It carries on an active trade, and has some manufactures, more especially porcelain. Klausenberg is the Claudiopolis of the Romans, and many Roman coins, bronzes, &c., have been found. The inhabitants are mostly Magyars. Pop. 29,923.

Klausthal (klous'täl), a town of Prussia, in Hanover, 48 miles S.S.E. of Hanover, the principal mining town of the Hartz. Pop. 8871.

Kléber (klā-bār), JEAN BAPTISTE, French general, born at Strasburg in 1754, and assassinated in Cairo by a Mohammedan fanatic in 1800. The son of a mason, he studied for two years in Paris to qualify himself as an architect; then entered the military school at Munich; and next joined an Austrian regiment, but quitted it in 1783. Having entered the Revolutionary army he became adjutant-major, engaged in the defence of Mainz, was appointed brigadier-general and sent to La Vendée. He afterwards commanded the left wing of the army of Jourdan, directed both the passage of the Rhine at Düsseldorf and the subsequent retreat: defeated the Prince of Würtemberg, and afterwards Prince Charles; and he was about to enter Frankfort when he was recalled (1797). Bonaparte selected him for a command in the expedition to Egypt, and when he left he intrusted the command of the army to Kléber, who, deeming resistance useless, concluded the convention of El Arish with the British, by which the French were to be conveyed home with arms and baggage. This convention being disowned by the English government, Kléber determined upon the resubjugation of the country, in which he was successfully engaged when he was assassinated.

Klephts, properly *robbers*, the name formerly given to those Greeks who kept themselves free from the Turkish yoke in the mountains, and carried on a perpetual war against the oppressors of their country.

Kleptoma'nia (Greek *kleptō*, I steal), a supposed species of insanity manifesting itself in a desire to pilfer. In admitting the plea of kleptomania great caution is needed. The best way to arrive at a judgment is to consider the previous character and personal interests of the person charged; to determine the value and usefulness of the article appro-

priated; the methods of the appropriation and its probable motive. Thus when a baronet steals broken crockery, and a clergyman purloins innumerable cheap Bibles, the ordinary motives for theft are inapplicable, and when the article is taken ostentatiously there is then a strong case in favour of kleptomania. When this is established the person so affected must be treated as one mentally diseased.

Kleve (klā'vè), German for Cleves. See *Cleves*.

Klippspringer, a beautiful little South African antelope, *Oreotragus* (or *Calotragus*) *saltatrix*, inhabiting the most inaccessible mountains of the Cape Colony.

Klootz, ANACHARSIS. See *Clootz*.

Klopstock, FRIEDRICH GOTTLIEB, a celebrated German poet, was born in 1724, died in 1803. He studied theology, and commenced in solitude the first canto of his sacred epic, *The Messiah*. The three first cantos of this work appeared in 1748, and excited universal attention. In Switzerland and Denmark, as well as Germany, the poem made a favourable impression, and Klopstock was invited to Copenhagen by the minister Bernstorff, and offered a small pension. From 1759 to 1763 he resided alternately at Brunswick, Quedlinburg, Blankenburg, and Copenhagen. In 1764 he wrote his drama, *Hermann's Schlacht* (Battle of Arminius), and sent it to the Emperor Joseph, but not with the success which, in his patriotic enthusiasm, he had promised himself. In 1771 he left Copenhagen for Hamburg, under the character of Danish secretary of legation and counsellor of the margraviate of Baden. In Hamburg he finished his *Messiah*. He also wrote a number of odes, &c. His reputation was greater in his own-day than has since been the case, but he is admitted to have done great service to German literature in assisting to free it from foreign, especially French influence.

Knapsack, a bag of leather or strong cloth for carrying a soldier's necessities, and closely strapped to the back between the shoulders.

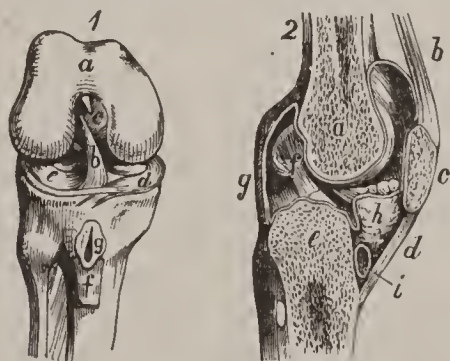
Knapweed, a popular name given to some species of *Centaurea*. *C. Nigra*, black knapweed; and *C. scabiosa*, greater knapweed, are common weeds, being rough hardy herbaceous plants growing by waysides, &c.

Knareborough, a town of England, county of York (West Riding), on the left

bank of the Nidd, 17 miles west by north of York. The environs of the town abound with objects of interest, including the ruins of the castle, founded in 1170; the dropping well possessed of powerful petrifying properties; and several curious excavations. Pop. 5065.

Knaus (knous), LUDWIG, a German painter, born in 1829. He studied at Düsseldorf under Karl Sohn and Schadow, but struck out a path for himself, painting subjects from everyday rustic life. In 1852-60 he lived mostly in Paris, and painted the chief pictures of his first period, *The Golden Wedding*, *The Baptism*, and *The Setting-out for the Dance*. In 1861-66 he resided in Berlin, among his paintings of this period being *The Juggler*, *His Highness on His Travels*, *Cobbler Boy* and *Organ-grinder*. From 1866 to 1874 he lived in Düsseldorf, and to this period belong some of the pictures on which his fame as a genre painter is most securely founded: *The Children's Feast*, *The Funeral*, *The Goose-girl*, *Brothers and Sisters*, &c. In 1874 he received an appointment in the Art Academy of Berlin. Among his later pictures are *A Holy Family*, *Bad Roads* (a tavern scene), *The Stubborn Model*, *The Wisdom of Solomon*, *Behind the Scenes*, &c. He has also painted portraits.

Knee, or **KNEE-JOINT**, that joint in the lower limbs of man which corresponds to



Human Knee-joint.

1, Right Knee-joint laid open from the front, to show the internal ligaments. *a*, Cartilaginous surface of lower extremity of the femur, with its two condyles. *b*, Anterior crucial ligament. *c*, Posterior do. *d*, Internal semilunar fibro-cartilage. *e*, External fibro-cartilage. *f*, Part of the ligament of the patella turned down. *g*, Bursa or sac containing synovial fluid laid open.

2, Longitudinal Section of the Left Knee-joint. *a*, Cancellous structure of lower part of femur. *b*, Tendon of extensor muscles of leg. *c*, Patella. *d*, Ligament of the patella. *e*, Cancellous structure of head of tibia. *f*, Anterior crucial ligament. *g*, Posterior ligament. *h*, Mass of fat projecting into the cavity of the joint below the patella. *i*, Bursa.

the elbow in the upper, and is formed by the articulation of the femur or thigh-bone with the tibia, or large bone of the leg.

The lower end of the femur terminates in two oblong rounded masses, called the *condyles* of the femur, which rest in two cavities in the upper part of the tibia; interposed between the two bones are the *semilunar cartilages*, which diminish the pressure of the femur on the tibia, and prevent the displacement of the former. In front of the knee-joint is the *patella* or *knee-pan*. The joint is capable of flexion and extension, and of a very slight rotatory movement. The accompanying figures and explanations will enable the joint and its chief features to be thoroughly understood. See also *Leg*.

Kneller (nel'ér), SIR GODFREY, portrait-painter, born at Lübeck about 1648, died in London, 1723. He studied under Bol and Rembrandt at Amsterdam, visited Rome, Venice, and Hamburg, and gained a good reputation for historical paintings as well as portraits. He came to England in 1684, and succeeded Sir Peter Lely as court painter to Charles II. He filled the same position under James II., William III., Anne and George I. The last-named made him a baronet. In addition to all the celebrities of the English court, including the *Ten Beauties* of the court of William, now at Hampton Court, he painted the 43 members of the Kit-Cat Club, and portraits of ten sovereigns, including Louis XIV. and Peter the Great. He was highly praised by Dryden, Pope, Addison, and Steele, but his works have more value historically than as works of art.

Knight, in feudal times, a man admitted to a certain military rank, with special ceremonies. See *Chivalry*. In modern usage one who holds a certain dignity conferred by the sovereign of Great Britain, and entitling the possessor to have the title of *Sir* prefixed to his christian name, but not hereditary like the dignity of baronet. The wives of knights have the legal designation *Dame* for which *Lady* is usually substituted. See *Knighthood*, *Orders of*.

Knight, CHARLES, English editor and publisher, born 1791, died 1873. He succeeded his father as a bookseller in Windsor, and for a number of years he edited a Windsor newspaper. Having removed to London in 1823 he commenced *Knight's Quarterly Magazine*, which contained the earliest contributions to literature of Macaulay, Praed, and others. In 1827 he undertook the superintendence of the publications of the Useful Knowledge Society, for

which he did a great deal of valuable work, superintending and publishing the Library of Entertaining Knowledge; the Penny Magazine and the Penny Cyclopædia, afterwards remodelled as the English Cyclopædia; &c. Other publications of his were the Pictorial Bible, the Pictorial Prayer-book, the Thousand and One Nights, Shakspeare, and many others. The Shakspeare was edited by Mr. Knight himself, and has, both for its text and notes, taken a high place among the numerous editions of the great dramatist. The most important of his own writings, the Popular History of England, occupied him seven years, 1854–61. An autobiography, *Passages of a Working Life During Half a Century*, appeared in 1863–65.

Knighthood, **ORDERS OF**, the name given to organized and duly constituted bodies of knights. The orders of knighthood are of two classes—either they are associations or fraternities, possessing property and rights of their own as independent bodies, or they are merely honorary associations established by sovereigns within their respective dominions. To the former class belonged the three celebrated religious orders founded during the Crusades—Templars, Hospitallers, and Teutonic Knights. The other class, consisting of orders merely titular, embraces most of the existing European orders, such as the order of the Golden Fleece, the order of the Holy Ghost, the order of St. Michael. The British orders are the order of the Garter, the Thistle, St. Patrick, the Bath, St. Michael and St. George, the Star of India, and the order of the Indian Empire. The various orders have each their appropriate insignia, which generally include a badge or jewel, a collar, a ribbon of a certain colour, and a star.

Knight Service, the original and most honourable species of feudal land tenure. The holder of a knight's fee, the extent of which is now doubtful, was bound to render military service to his lord for forty days in every year if required. The holder of half a knight's fee attended twenty days, and the holder of smaller fractions in proportion. Knight service was abolished by 12 Charles II. cap. xxiv., freehold taking its place.

Knights of Labour, a labour organisation founded at Philadelphia in 1869. Its operations are secret, but its professed object is the amelioration and protection of the labouring classes. This body comprehends the intelligence of the wage-workers of the United States. Of late years the mem-

bership has largely decreased, through internal dissensions and ill-advised strikes.

Knights of St. John. See *John (Knights of St.)*.

Knights of the Shire, members of parliament representing counties or shires, in contradistinction to citizens or burgesses representing boroughs.

Knights of Windsor, **POOR**, a charity founded by Edward III. for the benefit of 26 poor military men. William IV. in 1833 changed the name to the Military Knights of Windsor. The Naval Knights of Windsor are supported by a bequest of Samuel Travers.

Knights Templars. See *Templars*.

Knitting, an industrial and ornamental art allied to weaving, but of much later origin. It consists in forming a series of loops with a single thread, through which another row of loops is passed, and so on consecutively; differing from crochet in so far as the series of loops are not thrown off and finished successively. In hand-knitting steel wires are used to form the loops on. For manufacturing purposes hand-knitting has been entirely superseded by machinery.

Knolles (nōlz), or **KNOWLLES**, **RICHARD**, an English historian, born about 1543; died 1610. He was educated at Oxford, and became master of the free school of Sandwich, in Kent. He wrote a General History of the Turks (published in 1603 and 1610), the style of which is highly commended by Johnson, Hallam, and other critics, and *Lives and Conquests of the Ottoman Kings and Emperors*, continued to and printed in 1621.

Knot, a complication of a thread, cord, or rope, or of two or more threads, cords, or ropes by tying, knitting, or entangling. Knots expressly made as means of fastening differ as to form, size, and name according to their uses, as overhand-knot, reef-knot, half-hitch, close-hitch, timber-hitch, fisherman's-bend, carrick-bend, sheet-bend, single-wall knot, double-wall knot, &c. The term knot is also applied on shipboard to a division of the log-line which is the same fraction of a mile as half a minute is of an hour, that is, it is the hundred and twentieth part of a nautical mile; hence, the number of knots run off the reel in half a minute shows the vessel's speed per hour in miles, so that when a ship goes 8 miles an hour, she is said to go 8 *knots*. Hence, the word has come to mean also a nautical mile or 6086·7 feet.

Knot, a grallatorial bird of the family Scolopacidae and genus *Tringa* (*T. canutus*), closely allied to the snipe.

Knotgrass, a very common weed of the genus *Polygōnum* (*P. aviculāre*), remarkable for its wide distribution. It is of low growth, with branched trailing stems, and knotted joints (whence the name).

Knout, a kind of whip or scourge serving as an instrument of punishment in Russia. It was formerly in use in the army, but a few strokes only are now inflicted, as a disgrace, in case of dismissal. It is still sometimes used for criminals. The nobles were exempted from the knout, but the exemption was not always observed.

Knowles (nōlz), JAMES SHERIDAN, dramatist, born at Cork 1784, died at Torquay, 1862. He took to the stage in 1798, but meeting with indifferent success, he devoted himself to teaching, first in Belfast, and afterwards in Glasgow. His tragedy of *Caius Gracchus* was performed in 1815 with success, and from this time he had a prosperous career as author, actor, and lecturer. About 1845 he retired from the stage. He became afterwards a Baptist preacher, and published several theological works. In 1849 he received a pension of £200 a year from Government. The following are among his principal works:—*Caius Gracchus* (brought out at Belfast), 1815; *Virginius* (Glasgow), 1820; *William Tell* (Drury Lane), 1825; *The Hunchback* (Covent Garden), 1832; *The Wife of Mantua* (Covent Garden), 1833; *The Love-chase* (Haymarket), 1837; *Love* (Covent Garden), 1839. In 1847 and 1849 he published two novels, *Fortescue* and *George Lovell*.

Knox, JOHN, the chief promoter of the reformation in Scotland, was born at Gifford, in East Lothian, in 1505; died at Edinburgh in 1572. He was educated at the grammar-school of Haddington, and at either Glasgow or St. Andrews, and had Dr. John Mair or Major as his philosophical and theological teacher, but did not take the degree of master of arts. He became a secular priest about 1530, and spent about 10 years in a religious establishment in East Lothian. He became an avowed advocate of the reformed faith about 1542, and entered the family of Douglas of Longniddrie as tutor to his sons and those of the laird of Ormiston. In 1546–47 he preached to the beleaguered Protestants in the castle of St. Andrews, and when it was taken by the French, Knox was sent to France with the

other prisoners, and put to the galleys, from which he was released in 1549. He passed over to England, and, arriving in London, was licensed either by Cranmer or the Protector Somerset, and appointed preacher, first at Berwick, and afterwards at Newcastle. In 1551 he was appointed chaplain to Edward VI., and preached before the king at Westminster, who recommended Cranmer to give him the living of Allhallows, in London, which Knox declined, not choosing to conform to the English liturgy. It is said that he also refused a bishopric. On the accession of Mary, in 1554, he quitted England, and sought refuge at Geneva, where he had not long resided before he was invited by the English congregation of refugees at Frankfort-on-the-Main, to become their minister. A dispute concerning the use of a church service sent him back to Geneva, whence after a residence of a few months, he ventured, in 1555, to pay a short visit to his native country. He again retired to Geneva, where he wrote several controversial and other works, including the *First Blast of the Trumpet against the Monstrous Regiment of Women*, chiefly aimed at the cruel government of Queen Mary of England, and at the attempt of the queen regent of Scotland to rule without a parliament. A *Second Blast* was to have followed; but the accession of Queen Elizabeth to the throne of England, who was expected to be friendly to the Protestant cause, prevented it. In May, 1559, he returned to Scotland, and immediately joined the Lords of the Congregation. He preached at Perth on the occasion when the inflamed multitude made a general attack on the churches of the city, the altars being overturned, the pictures destroyed, the images broken, and the monasteries almost levelled to the ground. Similar vandalism took place in many other places, but these proceedings were censured by the reformed preachers, and by the leaders of the party. Being appointed minister of Edinburgh, he took a prominent part in the proceedings of the Protestant leaders from this time onward, and had the principal share of the work in drawing up the *Confession of Faith*, which was accepted in 1560 by the parliament. In 1561 the unfortunate Mary arrived in Scotland. She immediately began the regular celebration of mass in the royal chapel, which, being much frequented, excited the zeal of Knox, who openly declared from the pulpit, 'that one mass was more

frightful to him than 10,000 armed enemies landed in any part of the realm.' This freedom gave great offence, and the queen had long and angry conferences with him on that and other occasions. He preached with equal openness against the marriage of Mary and Darnley, giving so much offence that he was called before the council and inhibited from preaching. In the year 1567 he preached a sermon at the coronation of James VI., when Mary had been dethroned, and Murray appointed regent. After the death of Murray, in 1569, Knox retired for a time to St. Andrews. In 1572 he was greatly offended with a convention of ministers at Leith, for permitting the titles of archbishop and bishop to remain during the king's minority. At this time his constitution was quite broken, and he received an additional shock by the news of the massacre of St. Bartholomew. He had, however, strength enough to preach against it, but soon after took to his bed, and died. He was twice married, first to Marjory Bowes in 1555, and secondly, in 1564, to Margaret Stewart, daughter of Lord Ochiltree. In addition to numerous polemical tracts, letters, and sermons, Knox wrote a *Historie of the Reformation of Religion within the Reahn of Scotland*. The best edition of his works is that edited by David Laing (1846-64); the standard biography is M'Crie's *Life of Knox*.

Knoxville, a town of U. States, capital of Knox co. Tennessee, an important commercial and manufacturing centre at the head of steamboat navigation on the Holston river, 165 miles east of Nashville. It contains the East Tennessee University, the Knoxville University, the state agricultural college, and other educational and literary institutions. Pop. 1890, 22,535.

Knutsford, a town of England, county of Chester, 15 miles s.w. of Manchester, a favourite residence with Manchester merchants. It gives name to a parl. div. of Cheshire. Pop. 4,290.

Koala (ko-ä'lä), the native name for a marsupial animal of Australia, commonly referred to the family Phalangistidæ or phalangens. It somewhat resembles a small bear, hence its scientific name, *Phascolarctos cinereus* (Gr. *phaskos*, a pouch, and *arktos*, a bear). There is hardly any rudiment of a tail. Its forefeet have five toes, two of which are opposed to the other three. The peculiarity does not extend to the hind limbs. The koala lives much on trees, feed-

ing on the leaves, and often burrowing for roots. It is known by the names of 'native sloth' and 'native bear.'



Koala (*Phascolarctos cinereus*).

Kobé, KOBÉ, KOBBEH, a chief trading town of Darfur, Central Africa, situated on the main caravan route. Pop. 6000.

Kobé, a seaport of Japan, adjoining Hiogo so closely as to form one town with it. It is of more recent origin than Hiogo, and is strictly the port opened by treaty to foreign commerce. Combined pop. 1890, 135,639.

Kobelya'ki, a town, Russia, government of Poltava, situated on the Vorskla. Pop. 13,000.

Kob'old, a species of elf in the popular superstition of Germany, corresponding to the English *goblin*, and the Scottish *brownie*. The kobold is connected with a house or a family, and appears in bodily shape. Though inclined to mischievous teasing, they do on the whole more good than evil to men, except when irritated. They frequent mines as well as houses, and the metal *cobalt* has its name from this spirit.

Kobrin, a Russian town, government of Grodno, formerly the capital of a principality of the same name. Pop. 8732.

Kock, CHARLES-PAUL DE, French novelist, born 1794, died 1871. He wrote an immense number of novels which had a great popularity, and have yet a certain value as pictures of low and middle-class Parisian life during the first half of the 19th century. Besides his novels, he wrote some dramas, chiefly taken from them.—His son, HENRI DE KOCK, born 1819, assisted his father in various works, and has produced a large number of novels and plays of his own.

Ko'diak. See *Kadiak*.

Koel. See *Aligarh*.

Kohat', a town of India, head-quarters of district of the same name in the lieutenant-

KOHELETH—KONG MOUNTAINS.

governorship of the Punjab. Pop. including suburbs and cantonments, 18,179. The district has an area of 2838 sq. miles, and a pop. of 181,540. There are rich deposits of rock-salt, some petroleum springs, and sulphur mines.

Koheleth, COHELETH. See *Ecclesiastes*.

Koh-i-noor. See *Diamond*.

Kohl-rabi, a cultivated variety of the cabbage, distinguished by a swelling at the neck of the root, which is eaten, and in its



Kohl-rabi.

qualities much resembles Swedish turnip. It is valuable as a cattle food, and is steadily increasing in use in the United States.

Kokomo, Howard co., Ind., has various factories. Pop. 1890, 8261.

Kokra Wood, the wood of *Aporosa* or *Lepidostachys Roxburghii*, a tree of the Spurgewort family (Euphorbiaceæ), a native of India, used for musical instruments.

Kola, a seaport of Russia, in the government of Archangel, on the Kola, near its mouth in the Bay of Kola; the most northern town in European Russia. Pop. 800.

Kola, COLA, a genus of plants belonging to the natural order Sterculiaceæ, a native of Western Tropical Africa. The *Kola* or *Sterculia acuminata* produces a fruit which consists of two, sometimes more, separate pods containing several seeds about the size of horse-chestnuts. The seeds have been found to contain caffeine, the active principle of coffee, as also the same active principle as cocoa with less fatty matter. A drink prepared from them is largely used in tropical Africa, and is said to have digestive, refreshing, and invigorating properties. The tree has been introduced into the West Indies and Brazil. The negroes of Jamaica are said to get quickly rid of the effects of intoxication by using the kola-nut. It has

been introduced into Britain, manufactured into a paste, or into tablets, and is used as a tonic.

Kola'ba, a British Indian district in the southern division of the Bombay Presidency, stretching along the coast southward from Bombay harbour for 75 miles; area, 1496 sq. miles; pop. 381,649.

Kolapoor'. See *Kolhapur*.

Kolar', a district of the native state of Mysore, Southern India; area, 1891 sq. miles; pop. 461,129.—The chief town, also called KOLAR, is situated 43 miles E.N.E. of Bangalore. Pop. 11,172.

Kolding, a seaport of Denmark, east coast of Jutland, on the Koldingfjord, an inlet of the Little Belt. Pop. 7141.

Kolhapur (kol-hä-pör'), a native Indian state, Bombay Presidency; area, 2816 miles; pop. 800,189.—KOLHAPUR, the chief town, is a picturesque, thriving place, held in high esteem for the antiquity of its sacred shrines. Pop. 38,599.

Kolima. See *Kolyma*.

Kollin, or KOLIN, a town of Bohemia, on the Elbe, 35 miles east by south of Prague. It has manufactures of sugar, chemicals, &c. Frederick the Great was defeated here by Marshal Daun, 18th June, 1757. Pop. 11,332.

Köln. See *Cologne*.

Kolome'a, a town of Austria, in Galicia, 108 miles s.s.e. Lemberg, on the right bank of the Pruth. Petroleum refining, pottery, &c., occupy the inhabitants. Pop. 23,109.

Kolom'na, a town of Russia, in the government of and 60 miles south-east of Moscow. It has manufactures of woollen, linen, soap, &c., and an important trade. Pop. 18,808.

Kolyma', a river of Eastern Siberia, which rises in the Stanovoi Mountains, and after a course of nearly 1000 miles falls into the Polar Sea.

Komorn', the capital of the county of Komorn, in Hungary, at the confluence of the Danube and Waag, with some manufactures and a considerable trade. There is here a very strong fortress which has been repeatedly besieged. During the Hungarian insurrection of 1848-49 it was besieged by the Austrians in vain, but was surrendered by capitulation. Pop. 13,108.

Kong Mountains, a range of little known heights in W. Africa extending in a w. to e. direction at a distance of about 200 miles north from the Gulf of Guinea. Tributaries of the Niger have their sources in these mountains.—The town of KONG lies at the

eastern end of the chain, and is the centre of several caravan routes.

Ko'nia, or **KONIEH** (ancient *Iconium*), a town of Asiatic Turkey, pashalic of Karamania, in the centre of an extensive plain. It has an imposing appearance from a distance, but its interior is in a ruinous condition. The inhabitants are chiefly employed in making carpets, and in preparing leather, cotton, wool, and hides. Pop. 38,000.

Königgrätz (*keu'nihs-gräts*), a town of Bohemia, on the left bank of the Elbe, at the confluence of the Adler, 64 miles E.N.E. of Prague. It is the see of a bishop, and contains an ancient cathedral. The battle of Sadowa was fought in the vicinity on July 3, 1866. Pop. 8166.

Königinhof (*keu'ni-gin-hōf*), a town of Bohemia, 14 miles N.N.W. of Königgrätz, on the Elbe. Pop. 6813.

Königsberg (*keu'nīhs-berh*), a fortified seaport town of Prussia, capital of the province of East Prussia, on the Pregel, about 4 miles above where it enters the Frisches-Haff. It consists of three main parts—the *Altstadt*, or Old Town, situated on the west; *Löbenicht* on the east (both north of the Pregel), and *Kneiphof*, situated on an island formed by the Pregel, besides extensive suburbs south of the Pregel. Between the Altstadt and Löbenicht is the Schloss-teich, a fine sheet of water. The principal public buildings are the cathedral, a Gothic structure, begun in 1333, restored in 1856, situated on the Kneiphof; the Schloss, or palace, begun in 1255, formerly the residence of the grand-masters of the Teutonic order, and now containing apartments for the royal family, government offices, &c.; the Schlosskirche, or palace church, occupying a wing of the palace; the new university, completed in 1862; the old university; the exchange, a fine modern building; the city museum, theatre, &c. The university, founded in 1544 by the Margrave Albert, is attended by 800 to 900 students, and has connected with it a library of 220,000 vols., a zoological museum, and other valuable collections. The manufactures of Königsberg are various. The chief trade is in grain, flax and hemp, timber, tea, &c. Owing to shallow water the larger vessels bound for Königsberg land at Pillau, which is accordingly considered its port. The fortifications surround the city on all sides, and are now very strong. Königsberg entered the Hanse League in 1365. It suffered much during the Seven Years'

war by the occupation of the Russians from 1758 to 1764, and much more severely from the French, who entered it in 1807, after the battle of Friedland, and laid it under heavy contributions. Pop. 1890, 161,528.

Königsberg, a town of Prussia, province of Brandenburg, 41 miles north of Frankfurt-on-the-Oder. Pop. 5958.

Königshütte (*keu'nihs-hüt-è*), a town of Prussia, province of Silesia, 49 miles E.S.E. of Oppeln. The inhabitants are chiefly employed in iron-working and mining, coal and iron being raised in large quantities, and also zinc. Pop. 32,072.

Königsmark (*keu'nihs-märk*), **MARIA AURORA**, COUNTESS, born at Bremen 1670, died 1728. She was celebrated for her beauty and mental accomplishments; became the mistress of Frederick Augustus, elector of Saxony and king of Poland, and mother of Maurice of Saxony (Marshal Saxe), the celebrated French general. She was extravagantly esteemed by Voltaire.

Konrad. See *Conrad*.

Koodoo (native name), the striped antelope (*Antilope strepsiceros*, or *Strepsiceros koodoo*), a native of South Africa, the male of which is distinguished by its fine horns, which are nearly 4 feet long, and beautifully twisted in a wide spiral. The koodoo is of a grayish-brown colour, with a narrow white stripe along the back, and eight or ten similar stripes proceeding from it down either side. It is about 4 feet in height, and fully 8 in length.

Kookas. See *Kukas*.

Koom. See *Kum*.

Koordistan. See *Kurdistan*.

Kooria Moorla Islands, a group of five islands on the south-eastern coast of Arabia, belonging to Britain. There was a considerable deposit of guano on the largest island; but it was not of very good quality, and is now exhausted.

Kopek. See *Copeck*.

Ko'ran (*Al-Korân*, that is *the Koran*, which means originally 'the reading, or that which is to be read'), the book containing the religious and moral code of the Mohammedans, and by which, indeed, all their transactions, civil, legal, military, &c., are regulated. According to the Mohammedan belief it was written from the beginning in golden rays on a gigantic tablet in the highest heavens, and portions were communicated by the angel Gabriel to Mohammed at intervals during twenty-three years. These were dictated by Mohammed to a

scribe and kept for the use of his followers. After Mohammed's death they were collected into a volume, at the command of Mohammed's father-in-law and successor Abu Bekr. This form of the Koran, however, was considered to contain erroneous readings, and in order to remove these Caliph Othman caused a new copy to be made from the original fragments in the thirtieth year of the Hejra (652 A.D.), and then ordered all the old copies to be destroyed. The leading doctrine of the Koran is the Oneness of God, clearly laid down in the symbol of the Moslem—'God is God, and Mohammed is his prophet.' To Christ it assigns a place in the seventh or highest heaven, in the immediate presence of God, but he is simply regarded as one of the prophets—Adam, Noah, Abraham, Moses, Jesus, and Mohammed. The doctrines of good and bad angels, and of the resurrection and final judgment, are fully set forth, as is also God's mercy, which secures entrance into heaven and not the merits or good works of a man. The joys of heaven range from music and women to the supreme joy of beholding God's face, while the pains of hell are depicted in vivid colours. Idolatry and the deification of created beings are severely condemned. Another dogma is set forth in the Koran, yet not explicitly, that of the unchangeable decrees of God. Mohammed used the doctrine of predestination with great success to infuse into his adherents undaunted courage, which elevated them above all perils. The Koran prescribes prayer, fasting, alms, and the pilgrimage to Mecca and Mount Arafat. The great fast is that of Ramadan (which see). He prescribed prayer five times a day with the face turned towards Mecca. Purification must precede prayer, and where water is unattainable dry dust or sand may be used. To give alms was always a particular trait of the Arabians, but Mohammed made it obligatory. The pilgrimage or something similar had existed with most sects before him. In respect to the civil laws relating to polygamy, divorce, inheritance, &c., Mohammed followed step for step the laws of Moses and the decisions of the rabbis, only adapting them to the customs and prejudices of his countrymen. The Koran is written in prose, but the different parts of a sentence end in rhymes. In size it is about equal to the New Testament; it is divided into 114 *surahs* or chapters of unequal length, each of which begins with the phrase, 'In the name of

God.' As the work was written at different times, in different moods, and on different occasions, there is naturally great diversity in the style of different passages. The language is considered the purest Arabic. It is, however, very different from the spoken Arabic of modern times. Commentaries on the Koran are exceedingly numerous.

Kordofan', a country of Africa, in the Eastern Soudan between Darfur and the Nile. From 1821 to 1883 it formed one of the Soudanese provinces of Egypt, but at the latter date it was freed from Egyptian rule through the Mahdi's insurrection, and has since been virtually independent. The surface is generally flat and the soil naturally fertile. The climate in the wet season, lasting from June to October, is extremely unhealthy; in the dry season, though healthy, it is intolerably hot. The principal articles of trade are gum, hides, senna, ivory, cattle, gold, salt, slaves, &c. Cultivation is almost wholly confined to *duchn*, a species of millet. The inhabitants consist of negroes, Arabs, &c. Pop. estimated at 400,000. The chief town is El Obeid.

Korea. See *Corea*.

Kornegallé, a town of Ceylon, 55 miles N.E. of Colombo. It was formerly a capital, and has an ancient temple, a great resort for Buddhist pilgrims, on account of a footprint of Buddha being hollowed in the rock. Pop. 4000.

Körner (*keur'nér*), KARL THEODOR, German poet, born at Dresden 1791, killed 1813. He wrote the tragedies of *Rosamunde* and *Zriny*, and a large number of dramas for the Theatre Royal at Vienna, but owes his fame to his celebrated patriotic lyrics, which are all national in Germany. In 1813, when Germany took up arms against Napoleon, Körner joined the famous Lützow corps of black hussars, and was fatally wounded in a skirmish fought in the neighbourhood of Gadebusch, in Mecklenburg-Schwerin. The collection of songs published soon after his death as *Leyer und Schwert* (Lyre and Sword) contains some of the finest war-songs in any language.

Körös (*keu'reush*), NAGY (*nädy*), a town in Hungary, 47 miles south-east of Budapest. It contains a number of handsome buildings, and has a considerable trade in wool and cattle. Pop. 22,769.

Korvei. See *Corvey*.

Kosciusko (*kos-si-us'ko*, or *kosh-tsyush'-kō*), THADDEUS, Polish patriot, was born in

Lithuania of an ancient and noble family in 1746, and died at Soleure (Solothurn) 1817. He was educated in the military school at Warsaw, and was afterwards sent at the expense of the state in the capacity of sub-lieutenant to complete his studies in France. On his return to Poland he became tutor to the daughter of Gosnovski, marshal of Lithuania, but having conceived a passion for his pupil, and being disappointed in his suit, he quitted his native country and betook himself to America (1776), where he attracted the notice of Washington, was appointed by him engineer, with the rank of colonel, and afterwards general of brigade. He did not return to Europe till three years after the conclusion of the Peace of 1783. For some years after his return he lived in retirement, but after serving in his own country under Poniatowski, he was appointed in 1794 generalissimo of the insurgent forces. He defeated the Russians at Raclavice, near Cracow, but at the battle of Maciejovice his army was defeated and he himself wounded and taken prisoner. He remained in captivity for two years, but was liberated on the accession of Paul I. of Russia in 1796. After visiting England and America, he ultimately settled at Soleure in Switzerland, where he continued to live in quiet retirement. In 1817 he issued from here a letter of emancipation to the serfs on his estate in Poland. In 1818 his body was removed at the expense of the Emperor Alexander of Russia to Cracow, where it was buried in the cathedral, and where a monument was erected to him. A mound 150 feet in height, formed of earth from all the principal battle-fields of Poland, was also raised to his memory in the vicinity of Cracow.

Kosciusko, MOUNT, one of the highest mountain peaks in Australia, in the Muring Alps, in New South Wales, near the frontier of Victoria; 7308 feet high.

Kosel, a fortified town, Prussia, province of Silesia, 24 miles s.s.e. of the town of Oppeln, on the Oder. Pop. 5461.

Kosi. See *Coosy*.

Köslin (keus'lin), a town in Prussia, province of Pomerania, 4 miles from the Baltic, and 85 miles north-east of Stettin. It is regularly built, and has manufactures of paper, soap, &c. Pop. 17,277.

Koslov, or **KOSLOFF**, a town in Russia, in the government of Tambov, and 52 miles w.s.w. of the town of Tambov. It has a considerable trade in cattle, several impor-

tant annual fairs, and manufactories of woollens, linens, &c. Pop. 25,522. See also *Eupataria*.

Kosmos. See *Cosmos*.

Kosseir, a seaport of Egypt on the Red Sea, formerly of considerable importance. Pop. 1200.

Kosso. See *Cusso*.

Kossuth (kosh'shut), LAJOS (LOUIS), Hungarian patriot, born at Monok in the county of Zemplin, Hungary, 1802. He studied law, and in 1832 entered the Presburg parliament. For persisting in publishing the debates of the diet, he was condemned to four years' imprisonment. In 1841 he became editor of the Pesth Journal, and in 1844 he founded a national league in opposition to the Viennese government. In 1847 he was elected to the diet by the national party, and secured the appointment of a responsible Hungarian ministry, in which he became minister of finance. During the Hungarian war for liberty he was chosen governor or dictator, but the intervention of Russia rendered all the efforts of the Hungarians unavailing. Kossuth resigned, was succeeded by Görgey whom he accused of treachery, and was interned in Turkey. He was released through the intervention of Britain and the United States; visited these countries and met with an enthusiastic reception. He was long regarded as the leader of the Irreconcilable party, but in 1884 he became reconciled to the Hapsburg rule. His chief residence has of late years been in Italy.

Kostroma', an inland government of Russia, area 30,811 square miles. The surface consists of wide level plains, occasionally varied by gentle acclivities. Hemp and flax are largely grown, and the industries include the manufacture of silver and copper wares, leather, chemicals, &c. The forests are extensive. Pop. 1,290,399.—**KOSTROMA**, the capital stands on a height near the confluence of the Kostroma with the left bank of the Volga, 56 miles east of Jaroslav. It is an ancient place, and has a fine old cathedral situated in the Kreml or former citadal. Pop. 28,143.

Kotah, an Indian native state in Rajputana, under the political superintendence of a British agent. Area 3797 square miles, pop. 517,275.—**KOTAH**, the chief town, is situated on the river Chambal, and has a pop. of 40,270.

Köthen. See *Coethen*.

Koti, a river and Dutch settlement on the East Coast of Borneo.

Kottbus, a town in Prussia, province of Brandenburg and government of Frankfurt, on the Spree, 65 miles S.E. of Berlin. It is a busy manufacturing town. The chief manufactures are woollen cloth and yarns, linen, hosiery, tobaccos, toys, and carpets. There are also distilleries and breweries. Pop. 28,249.

Kotzebue (kot'ze-bö), AUGUST FRIEDRICH FERDINAND VON, a prolific German dramatist and miscellaneous writer, born at Weimar 1761, assassinated at Mannheim, 1819. In 1781 he went to St. Petersburg, where, obtaining the patronage of the empress, he was made governor of Esthonia and ennobled. About 1800 he returned to Germany, and attacked Goethe and other great German authors who had refused to associate with him. In 1806 he went again to Russia, and lived from 1807 on his estate Schwartz, in Esthonia. In 1813, as counsellor of state, he followed the Russian head-quarters, constantly writing to excite the nations against Napoleon. In 1817 he received a salary of 15,000 roubles, with directions to reside in Germany, and to report upon literature and public opinion. Kotzebue, who during the whole campaign had written in favour of the Russians, even at the expense of his native country, and had expressed the utmost contempt for liberal principles and institutions, was now odious in the eyes of most of his countrymen, and regarded as a spy. This feeling was so strong in the case of a young enthusiast named Sand, that he assassinated him as a traitor to liberty. He wrote more than 100 plays, a history of Germany and other works, most of which are now forgotten. Two of his plays, *The Stranger* and *Pizarro*, are well known on the British stage.—His son, OTTO, born in 1787, died 1846, made three voyages round the world, and discovered several islands in the Pacific.

Kouba. See *Kuba*.

Koumiss, or KUMISS, a preparation of milk, whether cow's, mare's, ass's, goat's, which is said to possess wonderful nutritive and assimilable properties. It consists essentially of milk in which alcoholic fermentation has been developed. On the Asiatic Steppes, where it has been long used as a beverage, it is made of mare's milk; but koumiss of mare's milk or goat's milk has a somewhat unpleasant smell.

Koursk. See *Kursk*.

Koussa, Kosso. See *Cusso*.

Kovno, a town in Russian Poland, in the government of the same name, of which it is the capital, 52 miles W.N.W. Vilna, on the left bank of the Niemen or Memel. The population, a great part of which consists of Jews, is 49,896.—The government has an area of 15,602 square miles, and its population is 61,461.

Kowloon. See *Cowloon*.

Kraal, a South African native village or town, usually a collection of huts surrounded by a palisade. Sometimes the term is applied to a single hut.

Kraguye'vatz, a town of Servia, on the Lepenitza, with a cannon and small arms factory, powder-mill, and arsenal. Pop. 9083.

Krakato'a, a small uninhabited volcanic island situated in the Sunda Straits, about equally distant from Java and Sumatra. Previous to the eruption of 1883 it measured 5 miles in length and 3 in breadth, and culminated in two elevations, the highest of which was known as the Peak of Krakatoa, and rose to a height of some 2750 feet above the sea-level. Krakatoa was the scene of an eruption in 1680, but since that time its history was uneventful till the disastrous eruption of 1883. In May of that year intimations of volcanic activity were observed, and on August 27th a gigantic explosion took place which actually blew away a large part of Krakatoa, and entirely altered the physical features of the island and the neighbouring coasts. An immense wave swept over the shores of the neighbouring islands occasioning a loss of life variously estimated at from 15,000 to 50,000. To the north two new islands appeared where the morning previous there had been from 30 to 40 fathoms of water.

Kraken, the term, of Norwegian origin, applied to a fabulous sea-monster, generally assumed to be a gigantic Cephalopod or cuttle-fish. It was first described by Pontoppidan, bishop of Bergen in Norway, but other old writers have accounts of substantially the same kind of monster. It is described as of enormous size; rising from the sea like an island about $1\frac{1}{2}$ miles in circumference, with enormous mast-like arms with which it wrecked ships, created whirlpools, and realized all that was prodigious and strange in size, habits, and appearance. The kraken stories are much akin to the modern accounts of the great sea-serpent. Naturalists are chary of accepting any but trust-

worthy evidence, yet recent researches and discoveries would seem to indicate that very large members of the cuttle-fish group do certainly exist, and that, from analogy, largely-developed forms of other marine classes may occasionally be found.

Kranach, LUCAS. See *Uranach*.

Krapotkine. See *Kropotkine*.

Krasnoiarsk' (the Town on the Red Cliff), a town in Siberia, capital of the government of Yenisseisk, at the junction of the Yenissei and Katcha. Manufactures of leather, &c., are carried on by artisan convicts, and there are also some gold-washings in the neighbourhood. Pop. 17,154.

Krasnovodsk', Russian fortress on the eastern shore of the Caspian Sea, lat. 40° N. It has been the starting-point of many important scientific and military expeditions to Central Asia.

Krayo'va, a town in Roumania, situated near the Schyl, capital of the administrative district of Dolshi. It has an active trade, particularly in salt from mines in the vicinity. Pop. 40,000.

Kreasote. See *Creasote*.

Kreatine. See *Creatine*.

Krefeld (krä'felt), a town in Rhenish Prussia, in the government of Düsseldorf, and 12 miles north-west of the town of Düsseldorf. It is the principal locality in Prussia for the manufacture of silks, velvets, and mixed silk goods. There are also manufactories of woollen, linen, and cotton cloth, wax-cloth, hosiery, soap, candles, paper, leather, chemical products, and tobacco. Pop. 1890, 105,371.

Krementchug, a town in Russia, government of Poltava, 67 miles south-west of the town of Poltava, on a sandy plain on the left bank of the Dnieper, here crossed by a magnificent tubular railway-bridge. It has a considerable trade in salt, tallow, and timber. Pop. 47,473.

Kremlin (Russian, *Krem'l*), a fortress, in Russia the citadel of a town or city; specifically applied to the ancient citadel of Moscow. See *Moscow*.

Kremnitz, a town in North-western Hungary, 15 miles north of Schemnetz, with gold and silver mines, which are wrought to a considerable extent, in the vicinity. Pop. 8550.

Krem'sier, an Austrian town, prov. of Moravia, on the March, 25 miles s.w. of Olmütz. It contains a palace of the archbishop of Olmütz, a picture gallery, and a library of 37,000 volumes. Pop. 11,816.

Kreutzer, **Kreuzer** (kroitz'sér), an old South German copper coin, equal to the sixtieth part of the gulden or florin, or about a third of a penny. The Austrian current coin bearing this name is the hundredth part of a florin, or equivalent to one-fifth of an English penny.

Kreuznach (kroitz'näh), a town in Rhenish Prussia, district of Coblenz, on the Nahe, 21 miles south-west of Mayence. There are valuable mineral springs containing bromine and iodine, which are much resorted to for their curative properties in scrofulous and other complaints. Marble-polishing, wine-growing, and the manufacture of leather are among the chief industries. Pop. 16,414.

Kriegspiel (krēh'spēl; War-game), a game of German origin, played with maps on a large scale, and coloured metal blocks, on the same scale as the map, representing bodies of troops of various strength (brigades of infantry, battalions of rifles, regiments of cavalry, besides artillery, engineers, pontoon troops, telegraph troops, &c.). The players are usually two on each side, and the game forms an exact miniature of tactical operations. It is played by alternate moves. Each move represents the lapse of two minutes, and rules are given to determine the distance that each branch of the service may move over in that time. When two bodies of men on opposite sides come into contact, the weaker in numbers and position is held to be defeated; but when they are equal in these respects victory is determined to one side or the other by the use of a die. The game is a favourite one in the German army, and has been adopted to a certain extent in that of Britain.

Kriloff (krē-lof'), or KRYLOW, IVAN ANDREYEVITCH, Russian fabulist, born at Moscow 1758, died at St. Petersburg 1844. His first compositions were dramas, which were not successful. In 1809 his first collection of fables was published, which, meeting with instant favour, have continued to be the delight of all ages and classes in Russia, many sentences in them having become popular proverbs. They have been translated into German, French, Italian, and English. From 1812 to 1841 Kriloff held a post in the St. Petersburg Imperial Public Library.

Krimnitzschau (krim'mit-shou), a busy manufacturing town in Saxony, 37 miles south of Leipzig, on the Pleisse, with woollen spinning and weaving, &c. Pop. 19,755.

Kris (krēs), or **KREES**, the dagger or poniard forming the universal weapon of the inhabitants of the Malay Archipelago. There are many forms of it, short and long, with straight or serpentine blade, and with every variety in the shape and ornamentation of the hilt and scabbard.

Krishna, in Hindu mythology, the eighth avatar of Vishnu and the most popular deity in the Hindu pantheon. He was ostensibly the son of Vasudeva and Devaki of the royal family of the Bhoja reigning at Mathura. The reigning prince at the time of his birth was Kansa, who, to prevent the fulfilment of a prophecy, sought to destroy the young child, but his parents, assisted by divine power, succeeded in baffling all his efforts. Every year of his life furnishes the subject of some legend, his story showing a remarkable resemblance to those of the Greek Heracles and Apollo. After a series of amorous and heroic exploits, detailed at length in the Puranas, he slew Kansa, mounted the throne, and was at last killed by the arrow of a hunter, shooting unawares in a thicket.

Krish'nagar, a town of Hindustan, administrative head-quarters of Nadiya district, Bengal, on the left bank of the Jalangi River. It has a college affiliated to the Calcutta University, a collegiate school, a considerable trade, and manufactures of coloured clay figures. Pop. 27,477.

Kronos. See *Cronos*.

Kronstadt. See *Cronstadt*.

Kroo, Kru, a native race, w. coast of Africa, much employed in doing rough work on vessels trading on the Liberia coast. Their territory extends about 70 miles along the coast; they are a stout, brawny race, and very industrious.



Krishna.

Kropot'kine, PRINCE PETER ALEXEIEVITCH, Russian anarchist, born at Moscow, 1842. As attaché for Cossack affairs to the governor of Eastern Siberia he made numerous journeys in Siberia and Manchuria; was made secretary of the St. Petersburg Geographical Society, and wrote several esteemed scientific books. In 1871 he joined the International Society, and began working his revolutionary ideas in Russia. He was condemned to three years' imprisonment, but made his escape and took up residence in Switzerland. Expelled from Switzerland he took refuge in France, and was, in 1883, condemned to five years' imprisonment for complicity in outrages at Lyons, but was pardoned in 1886, when he went to England. He is an eloquent speaker and writer, and has contributed several important articles to the *Encyclopædia Britannica*, and to leading British periodicals.

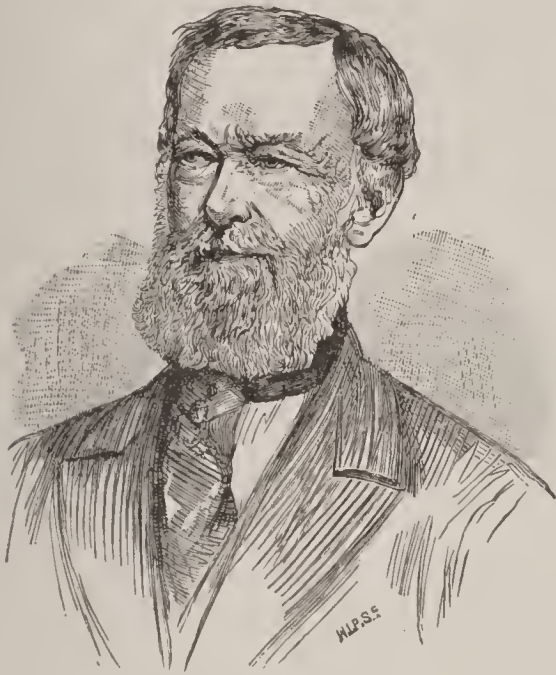
Krossen, a town in Prussia, on the Oder, in the province of Brandenburg. Pop. 6810.

Krummacher (krum'mäh-ër), FRIEDRICH ADOLPH, a German evangelical theologian, born 1768, died 1845. His writings, which have been very popular, include *Parables* (in verse); *Die Kinderwelt*, religious poems for children; *Sufferings, Death, and Resurrection of Christ*, &c.—His son, FRIEDRICH WILHELM, pulpit orator and writer, born 1796, died 1868. He spent some years in America, and latterly settled in Berlin. Among his best-known works are *Elijah the Tishbite*; *David, King of Israel*; &c.

Krummhorn (G. 'crooked horn'), the name of an old crooked wind-instrument made of wood, with a tone resembling that of a cornet. Also an eight-foot reed-stop in an organ, now generally called *Cremona*, *Clarionet*, or *Cromorna*.

Krupp (krup), ALFRED, German engineer and iron manufacturer, born at Essen 1812, died 1887. He succeeded his father as proprietor of a small metal foundry at Essen, which he gradually developed to an enormous extent. He discovered a new method of casting steel in large masses, which he exhibited in 1851. This led him to the manufacture of heavy steel ordnance, and especially to the construction of heavy breech-loading guns of a type invented by himself, the first of these being produced in 1864, but great improvements being subsequently effected, and the size being immensely increased. Though his name is popularly associated with the manufacture

of these large guns, the extensive works at Essen turn out also immense quantities of gun-carriages, shot, boiler-plates,



Alfred Krupp.

axles, wheels, rails, screw-shafts for steamers, &c.

Krylov (krē-lof'). See *Kriloff*.

Kshat'riya, the second or military caste in the social system of the Brahmanical Hindus, the Brahmans being first and the Vaisya and Sudra the third and fourth. The natural duties of the Kshatriya are bravery, generosity, rectitude, and noble conduct generally.

Kuba, a town in Russia, in the Caucasian government of Baku, district of Kuba, 47 miles s.s.e. Derbend. Pop. 13,429.

Kuban, a Russian territory in the Caucasus, bounded n. by the country of the Black Sea Cossacks, n.e. and e. by Stavropol and Terek, s. by the Caucasus Mountains, and w. by the Black Sea and the Strait of Kertch. Area, 36,251 sq. miles; pop. 1,107,922. The chief river is the Kuban, which rises in Circassia, at the foot of Mount Elbruz, flows first north, then north-west, and ultimately due west, and falls, after a total course of about 400 miles, into the Black Sea at the Bay of Kuban, near the Strait of Kertch.

Kublai (kō'blā) **Khan** (more properly KHÛBILAI KHAN), Mongol emperor, founder of the 20th Chinese dynasty, that of the Mongols or Yuen; born 1214, died 1294. In 1259 he succeeded his brother as Grand Khan of the Mongols, and in 1260 he conquered the

whole of Northern China, driving out the Tartar or Kin dynasty. He then ruled over the conquered territory himself, and nineteen years later added to it Southern China, driving out the Tartars from the north. Kúblai thus became sole ruler of an empire extending over a large part of Asia, as well as over those parts of Europe that had belonged to the dominions of Genghis Khan. Marco Polo, who lived at the court of this prince, describes the splendour of his court and entertainments, his palaces and hunting expeditions, his revenues, his extraordinary paper currency, his elaborate system of posts, &c. Kúblai Khan is the subject of a poetical fragment by Coleridge.

Kuch Behar. See *Cooch Behar*.

Kuching (kū-ching'), the capital of Sarawak, on the river Sarawak, contains the residence of the rajah and those of several European merchants. It has forts, barracks, a court-house, prison, &c.; a considerable trade, and a pop. of from 15,000 to 20,000.

Kuenen (kü'nen), ABRAHAM, Dutch biblical scholar, born at Haarlem 1828. He became professor of Hebrew and the Old Testament at the University of Leyden in 1855. He published in 1861-65 *An Historical Enquiry into the Origin and Collection of the Books of the Old Testament*, which has exerted a decisive influence on biblical scholars. He is also the author of *The Religion of Israel*, *The Prophets and Prophecy in Israel*, *Natural Religions and Universal Religions* (Hibbert Lecture), &c. He is one of the leaders of the reconstructive school of modern biblical criticism.

Kuen Lun, a mountain range of Central Asia, stretching over a space of about 1500 miles, and forming in its whole length the north frontier of Tibet, as the Himalaya does that of the south. Several of the summits reach an altitude of over 28,000 feet, and the numerous elevated branches which stretch towards the Indus, form valleys down which immense glaciers descend.

Kufic Writing. See *Cufic*.

Kuhhorn (kö'horn), same as *Alpen-horn*.

Kuhn (kön), ADALBERT, German philologist, born 1812, died 1881. He made important contributions to comparative philology, and is regarded as the founder of the science of comparative Indo-Germanic mythology. He edited for a number of years the valuable *Zeitschrift für Vergleichende Sprachforschung* (*Journal of Comparative Philology*).

Kuka, or KUKAWA, a town in Western Africa, the capital of Bornou, about 20 miles west from the south-west shores of Lake Chad. Pop. (estimate), 60,000.

Ku-Klux Klan, a secret society of a socio-political nature, bitterly opposed to the reconstruction measures which the government of the United States passed with reference to the rebel states of the south which had been subdued in the war of 1861-65. They numbered at one time about 550,000 members, spread over nearly all the states of the south, but especially South Carolina, Georgia, Alabama, Mississippi, Kentucky, and Tennessee. The members did not hesitate to commit any act of violence, even murder and arson. Strong measures were taken for the suppression of the society in 1871, and it soon after died away.

Kulbarga. See *Gulbarga*.

Kuldja, or KULJA, a city of Central Asia, in the Chinese territory Dzungaria, on the right bank of the Ili River, an important caravan centre. The district was taken possession of by the Russians in 1871, but retroceded to China in 1881. Pop. 12,500.

Kulm (kūhn).—1. A town of Prussia, province of West Prussia, 33 miles south-west of Marienwerder, on the Vistula. It has manufactures of woollen cloth, and a trade in cattle. Pop. 9975.—2. A village in Bohemia, about 9 miles north-east of Teplitz, where, on the 29th and 30th August, 1813, a great battle was fought, in which the allies under Barclay de Tolly totally destroyed the French army under Vandamme.

Kum, or KOOM, a town of Persia, 78 miles s.w. of Teheran; formerly a place of great magnificence, but destroyed by the Afghans in 1722. Pop. about 20,000.

Kuma'on, or KUMA'UN, a British district of Northern India, in the North-west Provinces, belonging to the Himalayas. Area, 6000 sq. miles; pop. 493,641. The district is generally mountainous, but has important and valuable tea plantations. The capital is Almora, and there are two hill stations, Naini-Tal and Ranikhet. It forms with the districts of Garhwal and Tarai the division or commissionership of Kumaon, which has an area of 12,438 sq. miles, and a pop. of 1,046,263.

Kúmptā. See *Coomptah*.

Kumquat, a very small variety of orange-tree (*Citrus japonica*) growing not above 6 feet high, and whose fruit, of the size of a large gooseberry, is delicious and refreshing. It is a native of China and Japan, but has

been introduced into Australia. In China it is preserved with sugar in jars, and forms an important export.

Kunch, a town of India, in Jaláun district, N.W. Provinces. Pop. 13,739.

Kunduz, a portion of North-eastern Afghanistan, between the Amu Daria and the Hindu Kush.

Ku'nersdorf, a village in Prussia, in the province of Brandenburg, near Frankfurt-on-the-Oder, celebrated for the defeat of Frederick the Great by the combined Russian and Austrian forces in August, 1759.

Kungur, a town, Russia, government of Perm. Pop. 11,882.

Kunigun'dé, SAINT, daughter of Siegfried of Luxembourg, married Henry of Bavaria, afterwards Henry II. of Germany; died as a nun in 1031. Accused of adultery she is said to have vindicated herself by walking over red-hot ploughshares barefooted. She was canonized in 1200, her feast being March 3.

Kur, or KURA (ancient *Cyrus* or *Káros*), a river of Western Asia, rises in the mountains w. of Kars, flows through the Russian governments of Tiflis, Elizabetopol, and Baku, and falls into the Caspian Sea, after a course of between 500 and 600 miles. It has numerous tributaries, the principal of which is the Aras or Araxes.

Kurdistan (kūr-di-stān'; 'Land of the Kurds'), an extensive territory of Western Asia. As it does not form a separate political division, its exact limits are not ascertained; but the eastern part of it forms the Persian provinces of Ardilan and Kerman-shah, and the remainder, constituting the far larger portion, is in Turkey, where it forms the principal part of the pashalic of Van, and a considerable part of that of Bagdad. It is a mountainous region, containing considerable forests of oak and other hard timber, and also numerous pastures, on which horned cattle, sheep, and fine-haired goats are reared, and in the valleys many fertile districts yielding rice, cotton, flax, fruits, and gall-nuts. It is drained by the Tigris and the Euphrates and their tributaries. The Kurds, to whom the territory owes its name, are not confined within its limits, but are found in considerable numbers eastward in Khorasan and over the hilly region of Mesopotamia, as far west as Aleppo and the Taurus. They are a stout, dark race, well formed, with dark hair, small eyes, wide mouth, and a fierce look. On their own mountains they live as

shepherds, cultivators of the soil, and bandits. Their language is a dialect of Persian, now much mixed with Arabic and Syriac; their religion Sunnite Mohammedanism. The Kurds owe but slight allegiance to either Turkey or Persia, living in tribes under their own chiefs, who commonly exact duties on the merchandise which passes over their territory. Their numbers have been estimated at 1,800,000.

Ku'riles, a chain of islands in the North Pacific, extending south-west to north-east, from Japan to Kamtchatka, and belonging to Japan; area, about 5000 sq. miles. The whole chain is of volcanic origin, and there are many active volcanoes, one of which is from 12,000 to 15,000 feet high. The population is very scanty.

Kurisches Haff (kō'rish-es), an extensive lagoon in East Prussia, extending over 50 miles along the coast of the Baltic, from which it is separated by a narrow belt of sand, and with which it communicates at Memel by a channel about 1000 feet wide called 'Memel Deep.' The water is fresh and shallow.

Kurland. See *Courland*.

Kurnal, KURNUL. See *Karnul*.

Kuro Sivo, or JAPAN CURRENT, the Gulf-Stream of the Pacific, is the offspring of the great equatorial current, flows past Formosa, Japan, the Kuriles, the Aleutian Islands, and thence bends southwards to California. It is much inferior to the Gulf-Stream both in volume and high temperature.

Kurrachee (ka-rā'chē), or KARACHI, an important seaport of India, on the coast of Sind, Bombay presidency, at the northern (or western) angle of the Indus delta, situated on a large and commodious creek or inlet, forming a good haven, perfectly safe in all winds, and out of the track of cyclones. The harbour is formed by a long narrow strip of sand on the west, ending with a rocky promontory called Manora Head, on which is a lighthouse; and by the Island of Kiamari on the east. The town, which is well built and has a good reputation for healthiness, came into British possession in 1842, and its extensive commerce, fine harbour works, and numerous flourishing institutions have all sprung up since that time. Pop. 1891, 105,199.

Kursk (kūrsk), a government of Southern Russia, area 18,901 square miles. The surface is undulating, and there are numerous streams, but none of them serviceable as waterways. The climate is mild and dry, and the rich soil produces abundant crops. Pop. 2,120,250.—KURSK, the chief town, on the Tuskora near its junction with the Sem, forms a railway junction from Moscow, Kieff, and Kharkoff. The principal public buildings are the cathedral of the Resurrection, the cathedral of St. Sergius, and a monastery. Pop. 45,307.

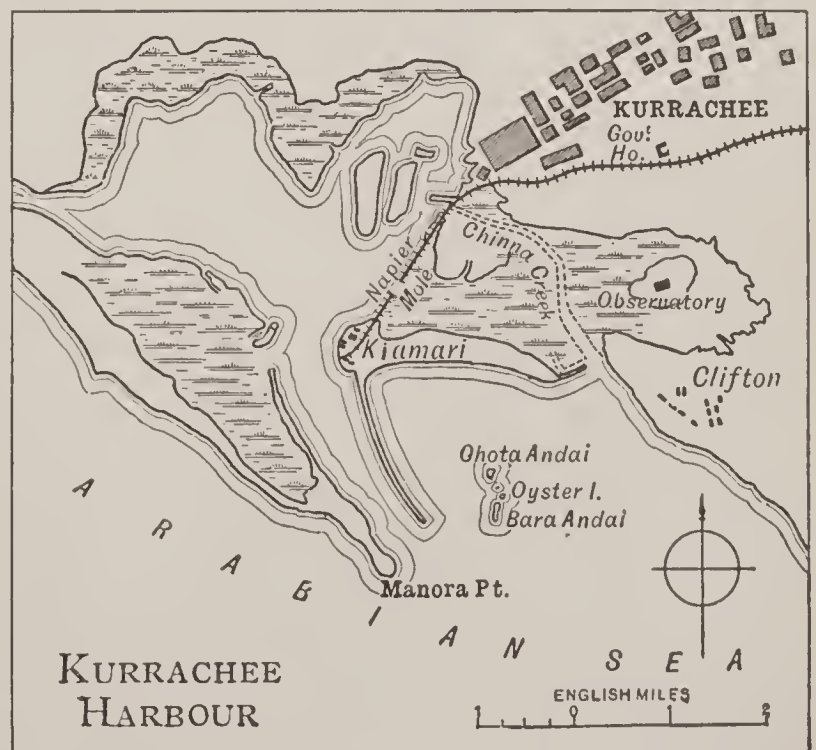
Kusi. See *Coosy*.

Kusnezk, a town in Russia, government of Saratov. Pop. 17,932.

Küstendji (küs-tend'ji), a Roumanian seaport of the Dobrudja, on the Black Sea, 140 miles E. of Bukarest. It is the chief outlet for the produce of the Dobrudja. Pop. about 5000.

Küstenland (küs'ten-lānt; 'Coast-land'), an administrative division of the Austrian Empire, at the head of the Adriatic, consisting of the county of Görz and Gradiska and the margraviate of Istria with the town of Trieste; area, 3084 square miles. The majority of the inhabitants are of Slavonic origin, but there is also a large proportion of Italians and a considerable number of Germans. Pop. 647,934.

Küstrin (küs'trin), or CÜSTRIN, a fortified



town in Prussia, in the province of Brandenburg, 16 miles north of Frankfurt-on-the-Oder, at the junction of the Wartha with

the Oder. It contains a castle in which Frederick the Great was confined by his father, and has manufactures of woollens, machinery, brass and copper wares, &c. Pop. 15,105.

Kutais (kū-tä'is), a Russian town, in Transcaucasia, capital of a government of the same name, 60 miles east from the Black Sea, on the railway between Poti and Tiflis. Pop. 13,000.—The government has an area of 8039 sq. miles, and pop. of 863,195.

Kuta'ya, or KUTA'IAH, a town in Asiatic Turkey, 180 miles north-east of Smyrna, on the route between Constantinople and Konia. It is the centre of the tract where the famous Turkey carpets are manufactured. Estimated pop. 60,000.

Kutch. See *Cutch*.

Kuttenberg, a mining and manufacturing town of Bohemia, 38 miles E.S.E. Prague. Pop. 13,154.

Kutu'soff, MIKHAIL, a Russian field-marshal, born in 1745, died 1813. He served against the Poles and the Turks, and became lieutenant-general in 1789. He was successively ambassador at Constantinople and Berlin, and in 1805 took command of the first corps of the Russian army against the French. He defeated Marshal Mortier at Dürenstein, and commanded under the Emperor Alexander at Austerlitz. In 1812 he superseded Barclay de Tolly in the war against Napoleon shortly before the battle of Borodino. For his victories over Ney and Davoust near Smolensk, he received the title of Prince Smolensky.

Kuve'ra, in Hindu mythology, the god of wealth. He resides in the splendid palace of Alaka, on Mount Meru, and is borne through the sky by four attendants on a radiant car given to him by Brahma. He has no temples dedicated to him, and no altars. On his head is a richly ornamented crown, and two of his four hands hold closed flowers of the lotus.

Kuyp (koip), or CUYP, ALBERT, Dutch painter, born at Dort 1605, died 1691. He studied under his father, Jacob Gerritsz Kuyp, a painter of some fame. He painted with great success landscapes, cattle, river scenes, portraits, and pictures of still life. He particularly excelled in the purity and brilliancy of light; and he was not surpassed, even by Claude, in accurate representation of the atmosphere, and of the effects of sunshine. The best of his pictures (which are highly valued and bring enor-

mous prices) are his landscapes, with meadows, herds, and horsemen, and often with boats and barges.

Kwango, or KUANGO, a great river of Central S. Africa, belonging to the Congo system, flowing almost due north, and joining the Kassai.

Kwangsi, a province of China, lying between lat. 22° and 26° N., and lon. 105° and 112° 30' E. It is mountainous, and is watered by the numerous branches of the Tao or Sikiang. Rice is largely grown, and gold, silver, and mercury are mined. Area, 78,250 sq. miles; pop. 5,151,327.

Kwangtung, the most southerly province of China, bordering on the Gulf of Tonquin and the China Sea. The northern part is mountainous, but the southern region is about the most fertile in China. It includes Hainan and a number of smaller islands along the coast. The capital is Canton; other ports are Swatow and Pakhoi. Area, 79,456 sq. miles; pop. 29,706,249.

Kweichow, a province of S.W. China, bounded by Sechuen, Yunnan, Hunan, and Kwangsi. It is rough and mountainous, produces rice, tobacco, and timber, and has mines of copper, iron, lead, and mercury. Area, 64,554 sq. miles; pop. 7,669,181.

Kyanite. See *Cyanite*.

Kyanizing, a process for preserving timber, cordage, &c., from the effects of dry-rot, named from the inventor, a Mr. Kyan. It consists in immersing the material to be preserved in a solution of corrosive sublimate. This process is now almost entirely disused, as wood is much better preserved by being saturated with kreasote or coal-tar.

Kyle (kil), the middle district of Ayrshire, Scotland.

Kyrie Eleison (kī'ri-ē ē-lī'son; from the Greek *Kyrie eleēson*, 'Lord, have mercy'), a kind of invocation used in parts of the Roman Catholic Church service. It is almost the only part of the liturgy in which the Latin Church has retained the use of Greek words.

Kyrle (kér'l), JOHN, surnamed by Pope the *Man of Ross*, was born in Gloucestershire, 1637; died at Ross, Hereford, in 1724. He was distinguished by his active benevolence, and by his power in enlisting the sympathies of his wealthy neighbours in his plans for making life more pleasant to his townsfolk.

Kyrle Society, an association the members of which belong to the well-to-do classes,

and the object of which is to bring the refining influences of natural and artistic beauty to bear on the homes and lives of the poorer classes. It originated in London,

and has branches in most of the large English and Scotch towns. It is of very recent origin.

Kythul. See *Kaithal*.

L.

L, the twelfth letter of the English alphabet, is usually denominated a semi-vowel or a liquid. *L* has only one sound in English. The nearest ally of *l* is *r*, the pronunciation of which differs from that of *l* only in being accompanied by a vibration of the tip of the tongue. There is no letter, accordingly, with which *l* is more frequently interchanged, instances of the change of *l* into *r* and of *r* into *l* being both very common in various languages. In fact in the history of the Indo-European alphabet *l* is considered to be a later modification of *r*.

La, in music, the sixth of the seven syllables—*ut* or *do*, *re*, *mi*, *fa*, *sol*, *la*, *si*—representing the seven sounds in the diatonic scale.

Laager (lä'gèr; D. 'a camp'), in S. Africa, an encampment more or less fortified. The original Boer laager is an inclosure made of the wagons of a travelling party for defence against enemies.

Laaland (lol'län), or LOLLAND, an island in Denmark, s. of Seeland, and separated from Falster on the E. by the narrow Guldborgsund; greatest length, S.E. to N.W., 36 miles; breadth, varying from 9 miles to 17 miles; area, 462 square miles. The surface is low and level; the soil very fertile, yielding crops of corn, beans, hops, hemp, and excellent timber. Pop. 64,420.

Laar, or LAER (lär), PIETER VAN, surnamed *Il Bamboccio*, Dutch painter, born in 1613; died at Haarlem in 1674 or 1675. He made a long residence at Rome, returning to Holland about 1639. He painted generally lively scenes from peasant life, fairs, children's games, hunting scenes, landscapes, &c.

Lab'arum, the imperial standard adopted by Constantine the Great after his miraculous vision of the cross and conversion to Christianity, differently described and figured, but generally represented as a pole having a cross-bar with the banner depending from it and bearing the Greek letters XP (that is, *Chr*), conjoined so as to form a monogram of the name of Christ.

Labat (lä-bä), JEAN BAPTISTE, a French

missionary and traveller, born in 1663, died 1738. He spent about twelve years in the West Indies, and is best known by his *Nouveau Voyage aux Iles de l'Amérique*. He also published a *Nouvelle Relation de l'Afrique Occidentale*; *Voyage en Espagne et Italie*; *Relation Historique de l'Éthiopie Occidentale*; *Mémoires du Chevalier d'Arvieu*.

Labédoyère (lä-bā-dwā-yār), CHARLES ANGÉLIQUE HUCHET, COMTE DE, French general, was born 1786, shot 1815. He entered the army in his 20th year, served with much distinction in Spain, Germany, &c., and was several times severely wounded. Napoleon raised him to the rank of general of division in 1815, and he fought with great courage at Waterloo. After the battle he hurried to Paris, and there distinguished himself by his hostility to the Bourbons. On the capitulation of Paris he followed the army behind the Loire, but returning to Paris, he was taken, tried by court martial, and sentenced to death.

Label, in Gothic arch., a projecting tablet or moulding over doors, windows, &c., called a hood-moulding, and a drip, dripstone, or weather-moulding when it is turned square.

La'bials, letters or characters representing a sound or articulation formed or uttered chiefly by the lips, as *b*, *f*, *m*, *p*, *v*.

Labia'tæ, the mint tribe, a very important and extensive natural order of exogenous plants, with a gamopetalous corolla presenting a prominent upper and lower lip, and a four-lobed ovary, changing to four seed-like monospermous fruits. This order contains about 2600 species, mostly herbs, undershrubs, or shrubs with opposite or whorled leaves, usually square stems, and a thyrsoïd or whorled inflorescence. They are spread throughout the world, and abound in all temperate latitudes. Many are valued for their fragrance, as lavender and thyme; others for their stimulating qualities, as mint and peppermint; others as aromatics, as savory, basil, and marjoram; several are used as febrifuges. Betony, ground ivy, horehound, and others possess bitter tonic

qualities. Numerous species are objects of great beauty.

Labiche (là-bēsh), EUGENE MARIN, French dramatist, born in Paris, 1815. He has, chiefly in collaboration with other authors, brought out upwards of 100 plays, many of them very successful. They are mostly distinguished by extravagant plots, and are full of droll situations. In 1880 he was elected to the Academy.

La'bium (L. 'a lip'), in zoology, a term applied to the lower lip of the insects and other Arthropoda, the upper being called the *labrum*. The term is also applied to the inner lip of the shell of univalve molluscs; the outer lip being the *labrum*.

Lablache (là-blāsh), LUIGI, celebrated bassosinger, born in Naples, 1794; died there, 1858. He was educated in a musical conservatory at Naples; went early on the stage, and in 1817 obtained great success as Dandini in Rossini's *Cenerentola*. He first visited Britain in 1834, and became very popular. His best character was Bartolo in *Il Barbiere*. In physique he was a perfect colossus, with the head, as has been remarked, of a Jupiter, the figure of a Milo, and the voice of a Boanerges. This last organ was unsurpassed for magnificent sonorousness, flexibility, and compass, and his dramatic were no less conspicuous than his vocal talents.

Lab'oratory, a building or workshop designed for investigation and experiment in chemistry, physics, &c. It may be for special research and analyses, or for quite general work. To the former class belong the laboratories which are attached to dye-works, colour works, chemical, and similar works. Laboratories are also attached to mining and metallurgical schools, to mints, to arsenals, &c. A general laboratory, such as might be attached to a school or university, has to include a variety of specialties, partly because the whole science and its applications have to be taken into account and exhibited, partly because students with very different aims frequent such places. The Cavendish Laboratory at Cambridge, and that of the Science and Art Department, South Kensington, are among the finest institutions of the kind in Europe.—ROYAL LABORATORY, the ammunition manufacturing department in Woolwich arsenal, organized in 1885.

Labouchère (lab'ū-shār), HENRY, English politician and writer, was born 1831, and educated at Eton. He was in the diplo-

matic service from 1854 to 1864; became member of parliament in the Radical interest for Windsor (1865-66), Middlesex (1867-68), and Northampton since 1880. He has gained a certain renown for his vivacious and satirical style, both in speaking and writing. He contributed *Letters of a Besieged President* in Paris to the *Daily News*—of which he was part proprietor—during the Franco-German war. In 1877 he started *Truth*, a weekly society paper.

Laboulaye (là-bö-lā), EDOUARD RENÉ LEFEBVRE, French publicist, born 1811, died 1883. He attained a high position as a writer of historical, social, and playfully satirical works. Among his best-known writings are *History of Landed Property in Europe*; *History of the United States; Germany, and the Slavic States*; *Paris in America*; *The New Bluebeard*; *The Poodle Prince*; *Prince Caniche*, &c. &c.

Labour. See *Birth*.

Labour, exertion, physical or mental or both, undergone in the performance of some task or work; particularly the exertion of the body in occupations by which subsistence is obtained, as in agriculture and manufactures. See *Division of Labour*, *Factory Act*, *Employers' Liability Act*, *Artisans' and Labourers' Dwellings Act*, &c.

Labour, American Federation of. This national organization, formed in 1886, by an association of most of the Trades-Union societies in the United States, embraces about 7000 local Unions and over 700,000 members. It is a rival in some respects of the Knights of Labour.

Labour Bureau, a department connected with the United States Commission of Emigration, having its head-quarters at New York. It is supported by Irish and German emigration societies. Its object is mainly to act as an agency between the immigrants and the employers of labour.

Labour, Department of, an office of the United States government, created in 1888, to collect and report information regarding labour, wages, capital, &c. It is in charge of a Commissioner of Labour, and employs about fifty clerks and agents.

Labour, Knights of. See *Knights of Labour*.

Lab'rador, a tract of land on the east coast of British North America, between Canada and the Atlantic, under the government of Newfoundland. It is partly desolate and rocky, but there are also extensive forests, and the cod-fisheries on the coast are very valuable.

The interior consists mostly of a table-land 2000 or more feet high. There are a number of lakes drained partly by rivers flowing towards Hudson's Strait, partly by others (such as Grand River), reaching the Atlantic in the south-east. The wild animals include the caribou or reindeer, bears, wolves, foxes, martens, and other fur-bearing animals. The climate is rigorous, there being about nine months of winter. No ordinary cereal can ripen in the climate, though barley cut green is used as fodder, and potatoes and some culinary vegetables can be grown. The population (about 4500 in all) consists of Indians, Esquimaux, and half-breeds, with a few whites on the coast. In summer it is increased by some 30,000 persons, chiefly from Newfoundland and connected with the fisheries. The Moravians have a number of missions along the coast, the Church of England one or two. The Hudson's Bay Company has several posts. Labrador is also the name given to the whole peninsula between the Atlantic, Hudson Strait and Hudson Bay and the St. Lawrence. See *Canada, North-east Territory, Quebec*.

Labradorite, LABRADOR FELSPAR, a mineral found on the coast of Labrador, and formerly called *Labrador hornblende*, though that is the designation of hypersthene. It is a lime-soda felspar, and is distinguished by its splendid changeability of colour. Blue and green are the most common colours, but occasionally these are intermingled with rich flame-coloured tints. It is sawed into slabs by the lapidaries, and employed in inlaid work.

Labrador Pine. Same as *Banksian Pine*.

Labrador Tea, a name given to two species of the genus *Ledum* (*L. latifolium* and *L. palustre*). They grow in the north of Europe, and in America north of Pennsylvania. They are species of heath, and are low shrubs with alternate entire leaves clothed underneath with rusty wool. The fragrant crushed leaves are used by the natives of Labrador as a substitute for tea. They possess narcotic properties, render beer heady, and are used in Russia in the manufacture of leather.

Lab'ridæ, the wrasse tribe, a family of acanthopterygious fishes, having the genus *Labrus* as the type. The ventral fins are under the pectorals, and the scales are cycloid.

Labrum. See *Labium*.

Labruyère, JEAN DE. See *Bruyère*.

Labuan', a small British colony consist-

ing of an island on the N.W. of Borneo. Area, 31 sq. miles; pop. 6298, mostly Malays from Borneo. It is well supplied with water, and has a good harbour at the settlement of Victoria, on its south-east side. Coal of excellent quality is plentiful, but has been mined hitherto with indifferent success. Other products are timber, caoutchouc, gutta-percha, wax, and sago. Its chief trade is between Borneo and Singapore. This island was taken possession of by the British in 1846, and is administered by a governor and a legislative council.

Labur'num, a tree of the genus *Cytisus*, the *C. Laburnum*, nat. order Leguminosæ, a native of the Alps, much cultivated by way of ornament. It is well and widely known for the beauty of its pendulous racemes of yellow pea-shaped flowers. The seeds contain a poisonous substance called cytisine, and are violently emetic. The wood is much prized by cabinet-makers and turners, being wrought into a variety of articles which require strength and smoothness. The Scotch laburnum of gardens is a form with larger leaves and flowers, which is known as *C. alpinus*.

Lab'yrinth, a structure having numerous intricate winding passages, which render it difficult to find the way through it. The legendary labyrinth of Crete, out of which no one could find his way, but became the prey of the Minotaur, was said to have been constructed by Dædalus. The hint of this legend was probably given by the fact that the rocks of Crete are full of winding caves. The Egyptian labyrinth was a building situated in Central Egypt, above Lake Mæris, not far from Crocodilopolis (Arsinoë), in the district now called the Fayoun. The building, half above and half below the ground, contained 3000 rooms. It was probably a place of burial. The labyrinth at Clusium, in Italy, was erected by the Etruscans, according to Varro, for the sepulchre of King Porsenna. There were other labyrinths at Lemnos and Samos, but their sites are unknown. Imitations of labyrinths, called mazes, were once fashionable in gardening. They were made of hedges of privet, or some similar shrub. The best known is that at Hampton Court.

Labyrinth'odon, a genus of fossil amphibians, whose remains are found in the carboniferous, permian, and trias formations, those of the trias being found in England, India, and Africa. They were allied to the crocodile and to the frog, and were 10 to

12 feet long. The name is derived from the labyrinthine structure of a section of the tooth, when seen under the microscope.



Labyrinthodon Salamandroides (restored).—Owen.

The hypothetical cheirotherium has been identified with the *Labyrinthodon*.

Lac, or **LAK**, from the Sanskrit *lakshā* or *laksha*, that is, 100,000. In the East Indies it is applied to the computation of money. Thus, a lac of rupees is 100,000.

Lac, a resinous substance produced upon numerous Indian trees by the exudations from the body of the female of the *Coccus ficus* or *Coccus lacca*. The finest is found on the palas or dhak (*Butēa frondōsa*), the peepul (*Ficus religiōsa*), and the koosum (*Schleichēra trijūga*). It is composed of five different varieties of resin, with a small quantity of several other substances, particularly a red colouring matter. It is formed chiefly by the female insects, each of which inhabits a cell, the incrustation of which seems intended to serve as a protection for the young. When the covering is complete the eggs are laid and the mother dies. The young break their way out, swarm on to the bark, and immediately commence the secreting of lac. In India the cultivation of the lac insect has received much attention. *Stick-lac* is the substance in its natural state, incrusting small twigs. When broken off and washed with water it almost entirely loses its red colour, and is called *seed-lac*, from its granular form. When melted and reduced to a thin crust, it is called *shell-lac*. Mixed with turpentine, colouring matters, and other substances, lac is used to make differently coloured sealing-wax. Dissolved in alcohol or other menstrua, by different methods of preparation, it constitutes various kinds of varnishes and lacquers.—*Lac-dye* and *lac-lake* are colouring matters used in dyeing cloth scarlet, obtained by different processes from stick-lac. In the state in which they are found in commerce

they have the form of little cakes. They were formerly obtained only from the East, but a superior kind of lac-dye is now manufactured in England from stick-lac. The colouring matter of lac-dye is analogous to cochineal.

Lacaille (là-kā-yè), **NICHOLAS LOUIS DE**, French mathematician and astronomer, was born in 1713, and died in 1762. He was educated for the church, but soon renounced theology for astronomy. He took an important part in the work of measuring an arc of the meridian, and in 1746 he was appointed professor of mathematics in Mazarin College. In 1751 he went to the Cape of Good Hope at the expense of the government, where he determined the position of about 10,000 stars with wonderful accuracy. As his departure from the Cape was delayed he employed the interval in measuring a degree of the southern hemisphere. His works on geometry, mechanics, astronomy, and optics were numerous. Among them are *Leçons d'Astronomie*, and *Astronomiæ Fundamenta*. His *Cœlum Australe Stelliferum* and *Journal Historique du Voyage fait au Cap de Bonne Espérance* were published after his death.

Lac'cadive Isles, a group of fourteen small coral islands including three reefs in the Indian Ocean, about 150 miles off the coast of Malabar, belonging to British India. The islands are well supplied with fish, and export quantities of coir or cocoa-nut fibre. Cocoa-nuts, cowries, jaggery, plantains, poultry, &c., are the only other exports, and are of little importance. The natives are a race of Mohammedans called Moplas (of mixed Hindu and Arab descent). They are bold seamen and expert boat-builders. Pop. 14,473.

Lace, a delicate kind of net-work, formed of silk, flax, or cotton thread, and used for the ornamenting of female dresses. It is made either by hand or machine, the former being produced by the needle, or made on the pillow. Needle laces are called *point*, those made on the pillow, *cushion*, *bobbin*, or *bone* laces. A prominent feature in all laces is the pattern or ornament; this may be worked either with or without a groundwork. Pillow lace consists of hexagonal meshes, four of the sides of each mesh being formed by twisting two threads round each other, and the other two sides by the simple crossing of two threads over each other. The pattern on parchment or vellum is attached to the pillow, and pins are stuck in the lines of the

pattern, round which the threads are plaited and twisted so as to form the required design. Among the laces of this class are Honiton, Buckingham, Mechlin, Valenciennes, &c. Point laces, made entirely by the needle and single thread, are known as Brussels, Alençon, Maltese, &c. Guipure lace consists of a network ground on which patterns are wrought in various stitches with silk, &c. It was originally a lace made in silk, thread, &c., on little strips of parchment or vellum. At Nottingham and elsewhere imitations of lace are produced by machines, called point net and warp net, from the names of the machines in which they are made. They are both a species of chain work, and the machines are varieties of the stocking-frame. The manufacture of lace appears to have existed from a considerably remote antiquity, as in the representations of Grecian female costume which have come down to us the dresses are frequently ornamented with lace of beautiful patterns. In modern times point lace originated in Italy, from which the manufacture spread to Spain and Flanders. Pillow lace was first made in the Low Countries.

Lace-bark Tree (*Lagetta lintearia*), a tree of the natural order Thymelacæ or Daphne family, is a native of the West Indies. It receives its common name from the fact that when its inner bark is cut into thin pieces, after maceration it assumes a beautiful net-like appearance. It is used by females by way of ornament, and the negroes manufacture matting from it.

Lacedæmon. See *Sparta*.

Lace-leaf. See *Lattice-leaf*.

Lacépède (là-sā-pād), BERNARD GERMAIN ÉTIENNE DE LA VILLE-SUR-ILLON, COUNT DE, French naturalist, born 1756, died 1825. He abandoned the military profession, for which he was destined, and devoted himself to the study of natural history. His teachers and friends, Buffon and Daubenton, procured him the important situation of keeper of the collections belonging to the department of natural history in the Jardin des Plantes. In 1791 he was elected member of the legislative assembly, and belonged to the moderate party. During the reign of terror he found refuge in the country. Napoleon made Lacépède a member of the conservative senate, and conferred on him the dignity of grand-chancellor of the Legion of Honour. After the restoration he was made a peer of France. In 1817 he published a new edition of Buffon's works. His History

of Fishes is considered his principal work. He published likewise the Natural History of Oviparous Quadrupeds and of Reptiles.

Lacerta, LACERTIDÆ. See *Lizard*.

Lace-winged Flies, insects of the genus *Hemerobius*, order Neuroptera, so called from their delicate wings having many netted spaces like lace. The larvæ are exceedingly voracious, and feed upon aphides.

Lachaise (là-shāz), FRANÇOIS D'AIX DE, confessor of Louis XIV., member of the congregation of Jesuits, was born in the Château d'Aix, 1624, died 1709. Lachaise commenced his course of studies in the Jesuit college at Rohan, and finished it at Lyons. He was the provincial of his order when Louis, on the death of his former confessor, Father Ferrier, appointed Lachaise his successor in 1675. He had much influence with the king, and acting with prudence and moderation, he kept the post till his death. He left philosophical, theological, and archæological works. Louis XIV. had a country-house built for him to the west of Paris, the extensive garden of which now forms the cemetery of Père Lachaise, the largest in Paris.

Lachesis (lak'e-sis), the name of one of the three Fates in classical mythology whose duty it was to spin the thread of life.

Lachine (là-shēn), a village of Canada, prov. Quebec, on Montreal Island. There are here rapids on the St. Lawrence which are avoided by means of a canal 9 miles long from Montreal harbour to a point above them.

Lachlan, a river of Eastern Australia, rising in New South Wales, to the west of the Blue Mountains. It is joined by the Murrumbidgee, the united stream afterwards falling into the Murray. It has a total length of about 700 miles.

Lachmann (làh'màn), KARL, a German critic and philologist, born at Brunswick 1793, died at Berlin 1851. He studied at Leipzig and Göttingen, and became a professor at Königsberg in 1818, and afterwards at Berlin in 1827. His critical sagacity was very great, and he published valuable editions of the Latin and old German classics.

Lachrymæ Christi (lak'ri-mēkris'tī; literally 'tears of Christ'), a sweet but piquant muscadel wine of agreeable flavour produced from grapes grown on Mount Somma, the second summit of Vesuvius. There are two kinds, the white and the red, of which the former is generally preferred.

Lachrymal Organs. See *Eye*.

Lachrymatory (lak'-), a small glass vessel found in ancient sepulchres, in which it has been supposed the tears of a deceased person's friends were collected and preserved with the ashes and urn.

La Condamine (là kon-dâ-mên), CHARLES MARIE, was born at Paris 1701, and died at the same place 1774. He entered the military profession, but soon renounced this career, and devoted himself to the sciences. In 1736 he was chosen, with Godin and Bouguer, to determine the figure of the earth, by measurements to be made in the equatorial regions of S. America, and he remained abroad for eight years. In 1748 he was elected a fellow of the Royal Society of London, and in 1760 a member of the Academy of Sciences of Paris. His principal works are his account of his travels, his work on the figure of the earth, &c.

Laconia, Belknap co., N. H., is a growing town, with hosiery and flannel mills and extensive car manuf. Pop. 1890, 6143.

Lacordaire (là-kor-dâr), JEAN BAPTISTE HENRI DOMINIQUE, French pulpit orator, born 1802, died 1861. He was educated for the law, which he renounced for the church, and received holy orders in 1827. In 1830 he was associated with Lamennais and Montalembert in conducting *L'Avenir*, in which the highest church principles and extreme radicalism were advocated with great eloquence and ability. Their paper was condemned by the pope in 1832, whereupon Lacordaire devoted himself to the duties of the pulpit, and the freedom and eloquence with which he treated social affairs in his discourses attracted admiring and spell-bound audiences. He became a Dominican friar in 1840, and his fame as an orator being now fully established, his advocacy of charities was eagerly sought, not only in Paris, but in the provinces. In the first election after the revolution of 1848 he was chosen the representative in the Constituent Assembly for the department of Bouches-du-Rhône, but resigned his seat after a few weeks. In 1850 the pope conferred on him the office of provincial of the Dominicans in France, which he held for four years. In 1860 he was elected into the Académie Française. His chief works are *Considerations on the Philosophic system of Lamennais*, *Sermons at Notre Dame*, *Letter on the Holy See*, *Letters on the Christian Life*, &c.

Lacquer (lak'ër), a varnish usually con-

sisting of a solution of shell-lac (sometimes sandarach, mastic, &c.) in alcohol, coloured by arnotto, gamboge, saffron, and other colouring matters, for coating brass and some other metals, to give them a golden colour, to preserve their lustre, and to secure them against rust. Lacquered brass appears as if gilt, and tin is made yellow. Lacquering is also applied to the coating with varnish of goods in wood and papier-mâché. The Japanese and Chinese excel in works of this kind.

La Crosse, a city of the United States, in Wisconsin, on the Mississippi at the mouth of the Black River and La Crosse, a great seat of the lumber trade. Pop. 25,090.

La Crosse, a game at ball, originating with the Indians of Canada, played somewhat on the principle of football, except that the ball is carried on an implement



Crosse or Bat.

called the *crosse*, the player in possession running with it towards the enemy's goal, and when on the point of being caught, passing it by tossing to one of his own side, or throwing it over his head as far in the direction of the goal as possible. La Crosse clubs are now pretty numerous in Britain.

Lactantius, LUCIUS CÆLIUS FRIMIANUS, or LUCIUS CÆCILIUS FIRMIANUS, a celebrated father of the Latin Church, probably a native of Italy, and born about the middle of the 3d century. He lived for a long time at Nicomedeia as a teacher of rhetoric, until Constantine the Great invited him to Gaul, and committed to his care the education of his eldest son Crispus. He died at Treves about 325. His writings are characterized by a clear and agreeable style. His seven books, *Institutiones Divinæ*, are particularly celebrated, and worthy of notice.

Lac'teals, numerous minute tubes which absorb or take up the chyle or milk-fluid from the alimentary canal, and convey it to the thoracic duct. See *Chyle*, *Lymph*.

Lactic Acid ($C_3H_5O_3$), an acid found in several animal liquids, and particularly in human urine. It is not only formed in milk when it becomes sour, but also in the fermentation of several vegetable juices, and in the putrefaction of some animal matters. It is a colourless, inodorous, very sour liquid, of a syrupy consistence. It coagulates milk.

Lactine, **LACTOSE**, sugar of milk ($C_{12}H_{22}O_{11}$), a substance obtained by evaporating whey, filtering through animal charcoal, and crystallizing. It forms hard, white, semi-transparent trimetric crystals, which have a slightly sweet taste, and grate between the teeth. It is convertible like starch into glucose by boiling with very dilute sulphuric acid.

Lactom'eter, or **GALACTOMETER**, an instrument for ascertaining the different qualities of milk. Several instruments of this sort have been invented. One consists of a glass tube 1 foot long, graduated into 100 parts. New milk is filled into it and allowed to stand until the cream has fully separated, when its relative quantity is shown by the number of parts in the 100 which it occupies.

Lactose. See *Lactine*.

Lactu'ca, the lettuce genus of plants. See *Lettuce*.

Lactuca'rium, the inspissated milky juice of several species of lettuce. It possesses slight anodyne properties, and is sometimes used as a substitute for opium.

Lacustrine Villages. See *Lake Dwellings*.

Ladakh', a governorship under the Maharajah of Cashmere, of irregular outline, comprising part of the valley of the Upper Indus and its tributaries. Lying at the back of the central Himalayas it has an elevation of from 9000 to 25,000 feet; area, about 30,000 square miles; capital, Le or Leh. The climate is characterized by cold and excessive aridity. Of domestic quadrupeds the principal are ponies, asses, oxen, sheep (regularly used as beasts of burden), goats, and dogs. The wool of the goat is the well-known shawl-wool of Cashmere. There is a considerable transit trade, Ladakh being naturally the great thoroughfare between Chinese Tartary and Tibet on the one hand, and the Punjab on the other. The trade is superintended by two commis-

sioners, one native and one British. The language is Tibetan, and the government a despotism controlled by the priesthood. The inhabitants are of Mongolian race and Buddhist religion. Polyandry prevails. Pop. estimated at from 168,000 to 200,000.

Lading, **BILL OF**. See *Bill*.

Lad'oga, a lake of Russia, between the governments of St. Petersburg, Olonetz, and Viborg; greatest length, north to south, 130 miles; average breadth, about 75 miles; area, 7156 sq. miles. It is the largest lake in Europe. It receives the waters of Lakes Onega, Sarina, and Ilmen through the Volkhor and other rivers, and discharges itself, at its south-west extremity, by the Neva, which falls into the Baltic. It contains numerous islands, many of which are inhabited. The navigation is dangerous for small craft, and canals along the southern shore connect the rivers Volkhor and Neva. The fishing on the lake is important.

Ladrones (la-drōnz', or la-drō'nes), or **MARIANNE ISLANDS**, a group of sixteen islands in the North Pacific Ocean, east of the Philippines and the Caroline Islands. Guam is the southernmost and largest; next in importance is Rota. The islands are mostly of volcanic origin, and are very rugged, but their general aspect is picturesque, being densely wooded and covered with a perpetual verdure; the soil also is extremely fertile. The islands were discovered by Magelhaens in 1521, and were settled by the Spaniards, to whom they still belong. Pop. about 8000.

Lady, as a title, is borne by the wives of knights, and of all degrees above them, except the wives of bishops. The legal designation of the wife of a knight or baronet is *Dame*, though it is customary to design her by *Lady* prefixed to her husband's surname. See *Address (Forms of)*.

Lady-bird, the name of a number of small coleopterous insects, or beetles, common on trees and plants in gardens. They form the genus *Coccinella* of Linnæus. They are usually ornamented with scarlet spots. They are of great service to cultivators on account of the number of aphides or plant-lice which they destroy.

Lady Chapel, a chapel dedicated to the Virgin Mary, frequently attached to large churches. It was variously placed, but generally to the eastward of the high altar, and in churches of earlier date than the 13th century the lady chapel is frequently an additional building. See under *Cathedral*.

Lady-day, the 25th of March, the day commemorating the Annunciation of the Virgin Mary, one of the regular quarter-days in England and Ireland. It is one of the immovable festivals of the Roman Catholic and Anglican Churches.

Lady-fern, a species of polypodiaceous fern, the *Athyrium Filix-fœmina*, common in Great Britain. It has bipinnate or tripinnate fronds of delicate texture, and of a remarkably elegant plumy structure.

Lady's-mantle (*Alchemilla vulgâris*), a British plant of the rose family, with rather large seven to nine lobed leaves (whence the name) and small greenish yellow flowers.

Lady's-slipper (*Cypripedium*), a beautiful genus of orchideous plants, conspicuous for its large inflated flowers. The species are confined to the northern regions of the globe. Three species are natives of the U. S. *C. Arietinum*, found from Canada to Vermont, remarkable for the singular form of the lips, readily suggests the name.

Laennec (là-en-nek), RENÉ THÉOPHILE HYACINTHE, French physician, born at Quimper 1781, died 1826. His fame rests on the splendid discovery of mediate auscultation, that is, of the use of the stethoscope. The original discovery, however, is claimed for Auenbrugger. In 1821 he was appointed professor of medicine in the College of France. The following year he was appointed professor of clinical medicine, and regularly performed the duties of his office till his death.

La Fari'na, GUISEPPE, Italian patriot, journalist, and historical writer, born at Messina 1815, died 1863. He took part in the revolution of 1848, and subsequently cooperated with Cavour and Garibaldi. He wrote *Souvenirs of Rome and Tuscany*, the *Revolution of Sicily*, &c.

Lafayette (là-fâ-yet), MARIE MAGDELAINE DE LA VERGNE, COUNTESS DE, French novelist, born 1632, died 1693. In 1655 she married Count Francis de Lafayette, and her house became a place of meeting for the most distinguished men of her time, including Rochefoucauld, Huet, Ménage, La-fontaine, &c. The most distinguished of her novels are *Zaïde*, *La Princesse de Clèves*, and *La Princesse de Montpensier*.

Lafayette, MARIE PAUL JEAN ROCH YVES GILBERT MOTIER, MARQUIS DE, was born in Auvergne 1757, died 1834. He commenced his career at the court of Louis XV., at the period when hostilities were commencing between Britain and her American colonies.

In 1777 he left France for America, having fitted out a vessel for himself, and was received by Washington and his army with acclamations. He joined their ranks as a volunteer, was wounded near Philadelphia, and commanded the vanguard of the American army at the capture of Cornwallis. He



Marquis de Lafayette.

returned to France on the close of the campaign; was called to the Assembly of the Notables in 1787, and was elected a member of the States-General, which took the name of *National Assembly* (1789). In the assembly he proposed a declaration of rights, and the decree providing for the responsibility of the officers of the crown. Two days after the attack on the Bastille he was appointed (July 15) commander-in-chief of the National Guards of Paris. It was through his means that the lives of the king and queen were saved from the mob that had taken possession of the palace at Versailles. After the adoption of the constitution of 1790 he resigned all command, and retired to his estate of La Grange. In 1792 he was appointed one of the three major-generals in the command of the French armies, and directed some small operations on the frontier of Flanders, at the same time striving unsuccessfully to defeat the Jacobins at Paris. Commissioners were sent to arrest him, on which he determined to leave the country, and take refuge in some neutral ground. Having been captured by an Austrian patrol he was confined at Olmütz till 1797. Having returned to his estate he lived for many years without taking part in public affairs, and declining

the dignity of senator offered him by Bonaparte, he gave his vote against the consulate for life. In 1818 he was chosen member of the Chamber of Deputies, and was a constant advocate of liberal measures. In 1824 he visited the United States, and was received with great enthusiasm. Congress voted him 200,000 dollars and a township of land. During the revolution of July, 1830, he was appointed general of the National Guards of Paris, and it was chiefly to Lafayette that Louis Philippe owed his elevation to the throne.

La Fayette, a town of the U. States, in Indiana, on the Wabash River and Wabash and Erie Canal, and at the intersection of several railways, 63 miles north-west of Indianapolis. It is the seat of the state agricultural college, and has a number of miscellaneous manufactures. Pop. 16,243.

Lafayette College, a flourishing institution at Easton, Pennsylvania, chartered in 1826. It has six degree courses of four years each—three general and scientific, and three technical.

Laffitte, JACQUES, French financier and statesman, born at Bayonne 1767, died 1844. He acquired a fortune by banking, and was intrusted with the private property of both Napoleon and Louis XVIII. He took an active part in the revolution of July, 1830, was made minister of finance and president of the council, in which situation he remained until March 14, 1831. He lost his fortune in the crisis which followed, but a national subscription in 1833 relieved him from embarrassment.

Lafontaine (lä-fon-tān), JEAN DE, French writer, born at Château-Thierry in 1621, died 1695. He was invited to Paris by the Duchess de Bouillon, and after being patronized by several persons of distinction Madame Sablière took him into her house, and freed him from domestic cares. He was in habits of intimacy with Molière, Boileau, Racine, and all the first wits of Paris, by whom he was much beloved for the candour and simplicity of his character. But he was no favourite with Louis XIV., who even hesitated some time to confirm his nomination to the French Academy. The first volume of his *Contes* or *Tales* appeared in 1664, a second in 1671. They are full of fine touches of genius, but are grossly indecent. Of his *Fables* (in which animals are represented speaking and acting) innumerable editions have been printed, and it is through them that he is universally known.

Lafontaine is also the author of *Les Amours de Psyché*, a romance; *Le Florentin* and *L'Eunuque*, comedies; *Anacreontiques*, &c.

Lager (lä'gèr) **Beer**, a light beer, not so intoxicating as the English pale ales, largely brewed in Germany and Austria. A similar beer is now made by British brewers, and it has for long been largely produced in the United States.

Lagerstroemia. See *Bloodwood*.

Lago Maggiore (mà-jō're; anciently *Verbānus*), a lake partly in Northern Italy, partly in Switzerland, about 39 miles long and 7 broad, traversed by the Ticino. It is 621 feet above the level of the sea, and at the northern end in some places as deep as 2500 feet. Its banks abound in every Alpine beauty, and are adorned with a number of picturesquely situated villages and towns. On all sides it is surrounded by hills, and it contains several islands. See *Borromean Islands*.

Lago'mys, the generic name of the Calling Hares, or Pikas. See *Pika*.

Lagoon', a name given particularly to shallow lakes connected with the sea, which are found along some low-lying coasts, as on that of the Adriatic near Venice.

Lagos, a seaport town in the south of Portugal, province of Algarve. Pop. 7279.

Lagos, a British colony on the Bight of Benin, Guinea coast, W. Africa. It consists of the island and town of Lagos, with Badagry, Palma, and Leckie on the mainland. Area, 1071 sq. miles. It is an important place for commerce, as it is the only point of communication with the outer world for an extensive and fruitful district of the interior. The chief article of commerce is palm-oil. Acquired by Britain in 1861, Lagos and the Gold Coast were for some time under one governor; but in 1886 Lagos was put under an independent administrator of its own. In 1891 the imports amounted to £650,192, the exports to £717,643. Pop. 100,000.

Lagrange (lä-gränzh), JOSEPH LOUIS, a celebrated mathematician, was born at Turin 1736, and died at Paris 1813. He was of French origin, and his great-grandfather was a cavalry officer in the French army, who afterwards passed into the service of Sardinia, where he early displayed a natural taste for mathematics. When scarcely nineteen years of age Lagrange was made mathematical professor in the artillery school at Turin. In 1764 he obtained the prize of the Academy of Sciences in Paris

for a treatise on the libration of the moon, and in 1776 for another on the theory of the satellites of Jupiter. About this time he made a visit to Paris, where he became personally acquainted with D'Alembert, Clairaut, Condorcet, and other savants. Soon after his return he received an invitation from Frederick the Great, to whom he had been recommended by D'Alembert, to go to Berlin, with the title of Director of the Academy. Here he lived for twenty years, and wrote his great work *La Mécanique Analytique*. After Frederick's death (1786) the persuasion of Mirabeau and the offer of a pension induced him to settle in Paris. He was the first professor of geometry in the Polytechnic school, and was the first inscribed member of the Institute. He took no active part in the revolution, and the law for the banishment of foreigners was not put in force against him. In 1794 he was appointed professor in the newly-established Normal School (*Ecole Normale Supérieure*) at Paris (1794), as well as in the *Ecole Polytechnique*. Napoleon bestowed upon him distinguished tokens of his favour, and as member of the senate, grand officer of the Legion of Honour, and count of the empire, Lagrange saw himself surrounded with every external honour. But he remained as modest and retiring as ever, devoting himself with the same zeal and industry to his studies. The most important of his works are his *Mécanique Analytique* (1788); *Theorie des Fonctions Analytiques* (1797); *Résolutions des Equations Numériques* (1798); *Leçons sur le Calcul des Fonctions*; and *Essai d'Arithmétique Politique*.

La Guayra. See *Guayra*.

La Harpe (là arp), JEAN FRANÇOIS DE, a French dramatic poet, critic, and philosopher, born at Paris 1739, died 1803. He formed a close friendship with Voltaire, whose style he imitated in his numerous dramas, eulogies, &c. About 1786 he began to lecture at the Lycée on literature. On the breaking out of the revolution La Harpe embraced the principles of republicanism; but during the reign of terror, his moderation rendering him an object of suspicion, he was in 1793 thrown into prison, where his ideas underwent a complete change. After being restored to liberty he continued his lectures, and collected them into a separate work (*Lycée ou Cours de Littérature Ancienne et Moderne*), which constitutes his most durable title to fame.

Laharpur (la-här-pör'), a town of India, in Oudh, 17 miles N. of Sitapur. Pop. 10,437.

La Hogue (og), a cape of northern France, forming the point of the peninsula on which is Cherbourg, department of La Manche. A naval battle was fought here, May 19, between the French under Tourville and the British and Dutch under Admirals Russell and Rooke, in which the latter were victorious.

Lahore', a city of Hindustan, capital of the Punjab, and administrative head-quarters of Lahore division and district, on the left bank of the Ravi, 265 miles north-west of Delhi. It covers an area of 640 acres, and is surrounded by a brick wall 16 feet high, flanked by bastions. The streets are extremely narrow, unpaved, and dirty; and the houses have in general a mean appearance. The most remarkable buildings are the mosques of Aurengzebe, of Vizier Khan, and of Sonara; the mausoleum of Runjeet Singh; &c. The European quarter lies outside the walls on the south, and dates from 1849. Among the public buildings and institutions are the Punjab University, the Oriental College, Medical School, Law School, Mayo Hospital, &c. In 1524 Lahore became the seat of the Mogul empire, under which it reached its greatest splendour. Before passing into the hands of the British it was the capital of the Sikhs. Pop. 1891, 176,854.—Lahore division has an area of 8987 sq. miles, and pop. 2,191,517. The central district of the division is called Lahore district. Area, 3648 sq. miles; pop. 924,106.

Lahr (lär), a town of Baden, 53 m. s.s.w. of Carlsruhe; manufactures textile fabrics, leather, &c. Pop. 9937.

Lahsa. See *El Hasa*.

Laibach, or LAYBACH (lī'bàh), a town of Austria, duchy of Carniola, of which it is the capital. It is situated 35 miles north-east of Trieste, on both sides of the river of the same name. Its principal buildings are the cathedral of St. Nicholas, with fine pictures, frescoes, and carvings; the old Gothic town-house; the old castle; the lyceum and other educational institutions. It manufactures woollen and cotton goods, paper, &c. Pop. 1891, 30,691.

Laing, ALEXANDER GORDON, African traveller, born at Edinburgh 1793, murdered 1826. After serving in the army and attaining the rank of major, he entered in 1822 on his career as an African traveller.

The results of his early journeys in West Africa were published in 1825. He explored the upper course of the Niger, and was assassinated by his guide near Timbuctoo.

Laing, DAVID, Scottish antiquary, born in Edinburgh 1792, died 1878. He became secretary of the Bannatyne Club, a position which he retained during the 38 years of the society's existence. All the publications of the club came under his superintendence, and in not a few cases he was the actual editor. In 1837 he was appointed librarian to the Society of Writers to the Signet, an office which he held till his death. He was in turn treasurer, secretary, vice-president, and foreign secretary to the Scottish Society of Antiquaries. He published the works of John Knox, with valuable notes; *Select Remains of the Early Popular Poetry of Scotland*; editions of Dunbar's, Henryson's, and Sir David Lyndsay's poems; Wyntoun's *Cronykil*, &c., besides editing several of the publications of the Abbotsford and Spalding Clubs, and of the Shakspeare and Woodrow Societies. Edinburgh University conferred the degree of LL.D. on him in 1864.

Laing, MALCOLM, Scottish historian, born 1762, died 1818. He was called to the Edinburgh bar in 1785. His best known work is the *History of Scotland from the Accession of James VI. to the Reign of Queen Anne*, with a Dissertation proving the participation of Mary Queen of Scots in the murder of Darnley.

Laisser-faire (lā-sā-fār), in economics, a term applied to the theory that a public authority should interfere in the concerns of a community as little as possible; that wealth tends to be produced most amply and economically where a government leaves individuals free to produce and transfer on mutually arranged terms, confining itself to the protection of property and person and the enforcement of contracts. This rule in practice is limited by various exceptions, as in government interference in the matters of education and the employment of chil-

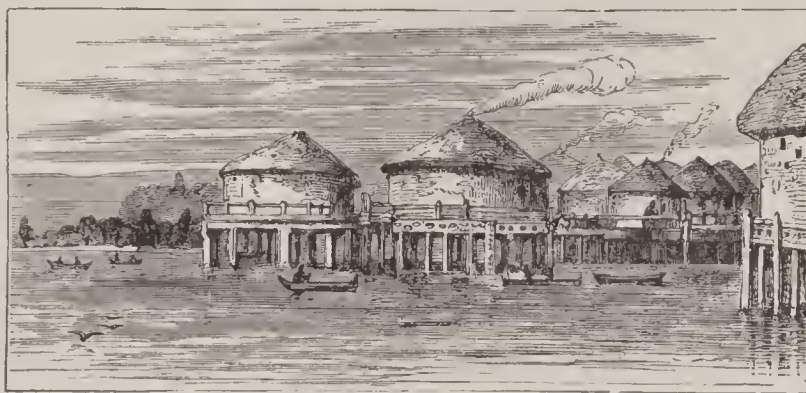
dren; in the promotion of health or morality; and in the private economic interests of certain industrial classes.

Laius. See *Edipus*.

Lake, a large sheet or body of water, wholly surrounded by land, and having no direct or immediate communication with the ocean, or with any seas, or having so only by means of rivers. It differs from a pond in being larger. Lakes are divided into four classes: (1) Those which have no outlet, and receive no running water, usually very small. (2) Those which have an outlet, but receive no superficial running waters

and are consequently fed by springs. (3)

Those which receive and discharge streams of water (by far the most numerous class). (4) Those which receive streams, and which have no visible outlet, being gen-



Lake-dwellings (restored).—From Troyon.

erally salt, as the Caspian Sea and Lake Aral. Lakes are also divided into mountain lakes and plain or plateau lakes.

Lake, GERARD, VISCOUNT, British general, born 1744, died 1808. He entered the army in 1758, and served in the Seven Years' war, in America in 1781, and in Holland 1793-94. He attained the rank of general, and was commander-in-chief in Ireland during the troubles of 1797-98, and in India during the Mahratta war (1803), which he brought to a brilliant conclusion. He defeated Holkar in 1805, returned to England in 1807, was made viscount, and appointed governor of Plymouth, where he died.

Lake-dwellings, the name given to habitations built on small artificial or partly artificial islands in lakes, or on platforms supported by piles near the shores of lakes. The use of habitations of this nature is a subject which has engaged the attention of archæologists and others very largely since the discovery of the remains of a lake-dwelling in Ireland in 1839, of similar ones in Switzerland in 1854, and subsequently of numbers of others elsewhere. The archæological interest thus attaching to these lacustrine remains has drawn attention to the fact of similar dwellings being still used in various parts of the world, in Russia,

the Malay Archipelago (Borneo and New Guinea), the Caroline Islands, Lake Maracaybo in Venezuela, New Zealand, and in a modified form in some parts of Central Africa. The first who is known to have described lake-dwellings is Herodotus, who mentions certain dwellings of this kind on Lake Prasias in Thrace as being approached by a narrow bridge, each habitation having a trap-door in the floor, giving access to the water beneath, through which fish were caught. A great number of these *pfahlbauten* (pile structures) have been discovered in the Swiss lakes, some belonging to the iron age, some few even to Roman times; but the greatest number appear to be divided in about equal proportions between the stone and bronze ages. The Celtic lake-dwelling, called *crannoges*, are more or less artificial islands composed of earth and stones strengthened by piles; those of Ireland being of a much later date than those of Switzerland, and are frequently noticed in early history as strongholds of petty chiefs. Similar structures are not infrequent in Scotland. The relics found in these buildings have thrown much light on pre-historic man, large populations having occupied these pile-buildings during extended periods of time. Dr. Keller of Zurich first described the lake-dwellings of the European Continent, his work being translated into English under the title of *Lake-dwellings of Switzerland and other Parts of Europe*, by J. E. Lee, 1878. The *crannoges* of Ireland and Scotland are described in the proceedings of the Royal Irish Academy and the Society of the Antiquaries of Scotland.

Lake of the Thousand Islands, an expansion of the river St. Lawrence, soon after it leaves Lake Ontario, between Canada and the state of New York. It contains about 1700 small islands.

Lake of the Woods, a lake on the southern frontier of British America, and partly within the United States territory, 220 miles west of Lake Superior. It is upwards of 70 miles in length, has an extremely irregular form, and a coast-line of about 250 miles. It is studded with numerous wooded islands. Rainy River, the principal feeder of the lake, enters it at its southeastern extremity; its discharge is at the north by the river Winnipeg.

Lakes, pigments consisting of a colouring matter combined with a metallic oxide. They are obtained by mixing with a solution of the colouring matter a solution of

alum or of a salt of tin, tungsten, zinc, lead or other metal, and then adding an alkali or alkaline carbonate. Among the pigments prepared in this way may be mentioned *blue* lake, consisting of cobalt blue, indigo, or ultramarine and alumina; *madder* lake, of madder and alumina; *orange* lake, of turmeric and alumina; *carmine* lake, of cochineal and alumina; *purple* lake, of logwood and alumina; and so on. Lake pigments are used in painting, calico-printing, and in the manufacture of wall-paper.

Lake School, or **LAKE POETS**, a name given by the Edinburgh Review to Wordsworth, Southey, Coleridge, Wilson, &c. They had little in common except their non-classicism, and received the name from residing in the Westmoreland and Cumberland Lake District.

Lakh. Same as *Lac*.

Lakhimpur (*lak-him-pör'*), a British district of India, occupying the extreme eastern portion of Assam; area, 11,500 sq. miles. It contains valuable forests, and the cultivation of tea has been introduced. Pop. 179,893.

Lakshmî, in Hindu mythology, the wife of Vishnu. She sprang in full perfection from the froth of the ocean. She is the Hindu Venus, the *ceres* or goddess of abundance, and the goddess of prosperity. Flowers and grain are the offerings most commonly given to her.

Lalande (*là-länd*), JOSEPH JÉRÔME LE FRANÇAIS DE, French astronomer, born at Bourg-en-Bresse, dep. of Ain, 1732; died at Paris 1807. He devoted himself to mathematics and astronomy, and was sent by the academy in 1751 to Berlin to determine the parallax of the moon, while Lacaille went with the same object to the Cape of Good Hope. After having finished his operations at Berlin, he was chosen member of the Academy of Sciences in Paris in the year 1753. Thenceforward no volume of their Transactions appeared which did not contain some important communications from him. In 1762 he was appointed professor of astronomy in the Collège de France, where he lectured with immense success to the end of his life. His chief works are his *Treatise on Astronomy*; *History, Theory, and Practice of Navigation*; and *Astronomical Bibliography*. He wrote all the astronomical articles for the great *Encyclopédie*, and re-wrote them for the *Encyclopédie Méthodique*, and contributed to various scientific periodicals, besides editing the

Connaissance des Temps from 1760 to 1775, and from 1794 till his death.

Lal'ita-Patan, a town in Northern Hindustan, in Nepaul, near the south bank of the Baghmati, and two miles s.s.w. from Khatmandu, with which it is connected by a bridged road. It is an old place, and contains many Buddhist temples. Pop. 24,000.

Lally-Tollendal, THOMAS ARTHUR, COMTE, born in Dauphiné, 1702, of Irish parents, his father having followed the fortunes of James II. Trained to arms, he was made brigadier on the field of Fontenoy for distinguished bravery. He accompanied the Pretender to Scotland in 1745, and in 1756 he was selected to restore the French influence in India, for which purpose he was made governor of Pondicherry. He utterly failed in this, surrendered Pondicherry in 1761, and was brought prisoner to England. The following month he was allowed to return to France, where, after a long imprisonment, he was condemned and executed (1766) for treachery, &c. His son, supported by Voltaire, obtained in 1778 a complete authoritative vindication of his father's conduct.

Lalo. See *Baobab*.

Lama, in zoology. See *Llama*.

La'maism, a variety of Buddhism, dating from the 7th century after Christ, and chiefly prevailing in Tibet and Mongolia; so called from the *lamas* or priests belonging to it. The highest object of worship is Buddha, who is regarded as the founder of the religion, and the first in rank among the saints. The other saints comprise all those recognized in Buddhism, besides hosts of religious teachers and pious men canonized after their death. The clergy are the representatives or re-incarnations of these saints on earth, and receive the homage due to them. Besides these saints a number of inferior gods or spirits are recognized by Lamaism and receive a



Lama of Tibet.

certain worship. The Lamaists have a hierarchy in some respects resembling that of the Roman Catholic Church, and they have also monasteries and nunneries, auricular confession, litanies, &c., and believe in the intercession of the saints and in the saying of masses for the dead. In the hierarchy there are two supreme heads, the *Dalai-lama* and the *Tesho-lama* in whom Buddha is supposed to be incarnate. Next in rank to these two grand-lamas are the incarnations of saints, after which follow those of patrons or founders of lamaseries, or Buddhistic monasteries, and then the lower ranks, distinguished merely by talents or learning. The *Dalai-lama* and *Tesho-lama* are nominally co-equal in rank and authority; but the former from possessing a much larger territory is in reality much the more powerful. The former, whose residence is at Potala, near Lassa, is the acknowledged head of the Buddhists not only in Tibet, but throughout Mongolia and China. When either of the two lamas dies, his place may be filled according to directions given by himself before his death, stating into what family he purposed transmigrating.

Lamar, LUCIUS QUINTUS CINCINNATUS, Justice of the U. S. Supreme Court, was born in Putnam co., Georgia in 1825. Admitted to the bar in 1847, he served two terms as Congressman from Mississippi (1856-1860). In 1861, after taking part in the secession convention of Mississippi, he entered the Confederate army and achieved distinction. After the downfall of the rebellion he was Professor of Political Economy and Law Professor in the University of Mississippi, and afterward served in both Houses of Congress, manifesting a fraternal feeling towards the North attracting general attention. In 1885 he was appointed Secretary of the Interior and in 1887 became U. S. Supreme Court Justice, bringing all the brilliant resources of his intellect to the discharge of his official duties. He died Jan. 24, 1893.

Lamarck, JEAN BAPTISTE PIERRE ANTOINE DE MONET, CHEVALIER DE, French naturalist, born in Picardy, 1744, died at Paris, 1829. He devoted himself to the study of medicine and physical science. Among his chief works are *Philosophie Zoologique*, in which he promulgated a theory foreshadowing what is now known as the law of evolution; *Histoire Naturelle des Animaux sans Vertebres*, *Tableau Encyclopédique de la Botanique*, &c. He held

the doctrine of spontaneous generation, and his religious beliefs have been described as a curious mixture of pantheism and deism.

Lamar'mora, ALFONSO, MARQUIS, Italian soldier and statesman, born 1804, died 1878. He left the military academy of Turin in 1823, and thenceforward devoted himself to army reform. He was engaged in checking the revolutionary movements of 1848, and soon after became minister of war. In 1854 he commanded the Sardinian troops in the Crimea. He accompanied Victor Emmanuel to the field in 1859 against Austria, and after the peace became president of the council. He was ambassador to Prussia in 1861, to France in 1867, and was governor of Rome 1870-71.—His elder brother, ALBERTO COUNT LAMARMORA, born 1789, died 1863, entered the French army, and was military governor of the Island of Sardinia. He published an important account of the island.

Lamartine (là-mâr-tên), ALPHONSE MARIE LOUIS PRAT DE, French poet and statesman, born at Mâcon 1790; died at Passy, near Paris, in 1869. After being educated at the Jesuit school at Belley he spent some years in the country and in travelling, without any definite occupation, devoting himself chiefly to poetry. By his first production, *Méditations Poétiques* (1820), he at once obtained a high place among the poets of the day. In 1820 he was attached to the legation at Naples, and married a rich English lady, Eliza Marianna Birch. The *Nouvelles Méditations Poétiques* (1823) and the *Harmonies Poétiques et Religieuses* (1828), established his poetic fame, and obtained for him admission into the French Academy (1830). After the revolution of July he travelled in the East, and on his return published *Voyage en Orient, Souvenirs, Impressions, Pensées et Paysages* (Paris, four vols. 1835). During his absence he had been elected a member of the Chamber of Deputies, and thenceforward his career was as much political as literary. In 1847 he published his *Histoire des Girondins* (Paris, eight vols.), in which he manifested strong republican leanings. After the February revolution of 1848 he became a member of the provisional government in the capacity of minister of foreign affairs. For some months he enjoyed unbounded popularity, and his energetic behaviour was on more than one occasion the means of averting incalculable evils. After

the insurrection of June 1848 he lost his popularity, and in 1851 withdrew from public life. He was latterly much impoverished, and was voted an annuity in 1867. Among his later works, which did not add to his reputation, were *Histoire de la Restauration*; *Histoire de Turquie*; *Histoire de Russie*; *Le Conseiller de Peuple*; *Le Civilisateur*; *Esprit de Mme. de Girardin*; *Shakspeare et son Œuvre*; *Vie de Tasse*. His *Mémoires* appeared in 1871.

Lamb, CHARLES, English essayist and humorist, born in London 1755, died at Edmonton 1834. He was the son of a clerk to one of the benchers of the Inner Temple, and was educated at Christ's Hospital, where he formed his long friendship with Coleridge. On leaving the hospital he was employed for a short time in the South Sea House, from which he removed in 1792 to an appointment in the accountant's office of the East India Company. Here he remained till 1825, when he was permitted to retire on a pension of £450. The whole course of his domestic life was devoted to the safe-keeping and care of his sister Mary, who in a fit of acute mania had stabbed her mother to the heart in 1796. His first appearance as an author was in 1798, when he published a volume of poems in conjunction with his friends Coleridge and Lloyd. His love for 17th century literature bore fruit in the *Tales from Shakspeare* (1807) and *Specimens of English Dramatic Poets who lived about the time of Shakspeare* (1808). He made two attempts at the drama: *John Woodvil*, written in imitation of the early English dramatists; and a farce entitled *Mr. H.*, which was performed at Drury Lane in 1806, and proved a failure. On the other hand, his tale of *Rosamund Gray* (Lond. 1798) was well received when it appeared, and is still a favourite. He owes his literary distinction to his delightful *Essays of Elia*, chiefly contributed to the *London Magazine*. They have been frequently republished in a collected form. Here, in a style ever happy and original, he has carried the short humorous essay to a point of excellence perhaps never before attained.—His sister MARY ANNE (born 1765, died 1847) was joint author with her brother of *Mrs. Leicester's School*, *Tales from Shakspeare*, and *Poetry for Children*.

Lamballe, MARIA THERESA LOUISA DE SAVOIE-CARIGNAN, PRINCESS DE, was born at Turin 1749, and married to the Prince de Lamballe, who died the next year. She

was the devoted friend and companion of Marie Antoinette, whose sufferings she shared till 8th Sept. 1792, when she was cruelly murdered.

Lambayeque (lām-bā-yā'kā), a town in Peru, capital of the department of the same name, 6 miles from the sea, on the river Lambayeque. Pop. 6248.—Area of department, 17,939 sq. miles; pop. 85,984.

Lambert, DANIEL, noted for his extraordinary size, was born in Leicester 1770, died 1809. He was exhibited in London and the principal towns of England, and at the time of his death was 5 feet 11 inches in height, weighed 739 lbs. (over 52½ stones), and measured 9 feet 4 inches round the body, and 3 feet 1 inch round the leg.

Lambert, JOHN, parliamentary general during the English civil war; born at Kirkby Malhamdale, Yorkshire, 1619; died at Guernsey 1692. He entered the parliamentary army under Fairfax, was colonel at Marston Moor, and major-general in the war in Scotland. He took the lead in the council of officers who gave the protectorate to Cromwell, but he afterwards fell into disgrace, and was deprived by Cromwell of all his commissions, though a pension of £2000 was allowed him for past services. He headed the confederacy which deposed Richard Cromwell, and in 1660 set out for the north to encounter Monk, but was deserted by his troops, seized, and committed to the Tower. At the Restoration he was excepted from the act of indemnity, brought to trial, and condemned to death, but had his sentence commuted to banishment to Guernsey.

Lambert's Pine (*Pinus Lambertiana*), a N. American pine growing in California, and sometimes reaching the height of 300 feet. It yields when burned a sugary substance known as Californian manna. The leaves are in fives; the cones are 14 to 18 inches long, and contain edible seeds.

Lambe'se, a town of Algeria, department of and 62 miles s.w. of the town of Constantine. It is the site of the ancient Lambæsa, and has important Roman remains.

Lambeth, a parliamentary borough of South London, opposite to Westminster, with which it is connected by a bridge 1040 feet long. It has recently become famous for its potteries. Lambeth Palace, the official residence of the Archbishops of Canterbury, contains a library with 30,000 volumes and upwards of 14,000 manuscripts. St. Thomas's Hospital is situated on the

Albert Embankment, opposite the Houses of Parliament. The borough is divided into four parliamentary divisions, North, Kennington, Brixton, and Norwood. Pop. 1891, 275,202.

Lambeth Articles, a series of nine articles drawn up by Archbishop Whitgift in 1595, embracing the most pronounced doctrines of Calvinism. They were rejected by the queen and parliament, and again at the Hampton Conference, 1604.

Lame'go, a city of Portugal, in Beira, in a plain near the Douro, 36 miles east of Oporto. It has an old Gothic cathedral. Pop. 8385.

Lamellibranchiata (-brang-ki-ā'ta), a division of the higher Mollusca, represented by the oysters, mussels, cockles, &c., which are distinguished by the possession of a bivalve shell, the absence of a distinct head, and the presence of four lamellar or plate-like gills (whence the name).

Lamelliros'tres, a family of swimming birds, distinguished by the flat form of the bill, which is invested by a soft skin, and provided at the edges with a set of transverse plates or 'lamellæ,' through which the mud, in which those birds grope for food, is sifted or strained. The family comprises the ducks, geese, swans, flamingoes, &c.

Lamennais (lā-men-ā), HUGUES FÉLICITÉ ROBERT DE, French writer on religion and politics, born at St. Malo 1782, died 1854. He was ordained priest in 1816, and first attracted attention by his apology for Roman Catholicism, the *Essai sur l'Indifférence en Matière de Religion*. In 1824 he declined the offer of a cardinal's hat, and the following year published a work favouring ultramontane doctrines, *La Religion Considérée dans ses Rapports avec l'Ordre Civil et Politique*. From this time he began to preach the separation of church and state, as he believed he could only deliver the former by freeing it from the yoke of the latter. On the outbreak of the July days of 1830 he became a convert to the dogma of the sovereignty of the people. In September of that year he began to publish his *L'Avenir*, which had for its motto, 'God and Freedom.' This journal, which advocated religious and political reforms, was in 1832 condemned by the pope and suppressed. In 1834 he finally revolted from Rome in his *Paroles d'un Croyant* (Words of a Believer). This book, which produced an almost unexampled sensation, passed in a

few years through more than 100 editions, was translated into almost all living languages, and reprinted in almost all foreign countries. It was condemned by the pope, and Lamennais answered by the *Affaires de Rome*. His subsequent works were all extremely democratic, and he gradually became both atheist and socialist. At the revolution of 1848 he became a member of the national assembly, but after the *coup d'état* he lived in strict retirement.

Lamentations, the name given in the authorized version of the Scriptures to a pathetic poem made up of five distinct elegies. They appear in the Hebrew canon with no name attached, but ancient tradition, internal evidence, and a prefatory verse which appears in the Septuagint point to the authorship of Jeremiah. The first four of the dirges are alphabetical acrostics, successive verses, or in chap. iii. successive sets of three verses, beginning alphabetically. Chap. v. is not in acrostic form. According to Josephus, Jerome, and also some modern critics these poems were written on the death of King Josiah (see 2 Chron. xxxv. 25), but the contents of the book itself plainly show that a national calamity—the destruction of Jerusalem and the overthrow of the Judean state by the Chaldeans—is referred to.

Lamia'ceæ, a synonym of Labiatae. See *Labiatae*.

Lamina'ria, a genus of dark-spored seaweeds, having no definite leaves, but a plain ribless expansion, which is either simple or cloven. *L. digitata* is the well-known tangle on the shores of Great Britain.

Lamination, the arrangement of rocks in thin layers or laminae. This arrangement prevails amongst all the varieties of gneiss, mica schist, chlorite schist, hornblende schist, &c.

Lammas, one of the four quarterly term days in Scotland, occurring on August 1. The name is from the A.-Sax. *lāf-mæsse*, that is, *loaf-mass*, bread-feast; so called because on this day offerings were formerly made of the first-fruits of harvest.

Lämmergeier (len'ér-gi-ér; German, 'lamb vulture'), the bearded vulture, a bird of prey of the genus *Gypaëtos* (*G. barbatus*), family Vulturidæ, forming a link between the vultures and the eagles. It inhabits the Swiss and German Alps, as well as the higher mountains of Asia and Africa, and is the largest European bird of prey, measuring upwards of 4 feet from beak to tail, and 9

or 10 in the expanse of its wings. Besides eating carrion, it preys on living chamois, lambs, kids, hares, and such like animals,



Lämmergeier (*Gypaëtos barbatus*).

but it does not disdain when pressed rats, mice, and other small quadrupeds.

Lammermuir Hills, a range of Scottish hills stretching in a generally eastward direction from s.e. Midlothian to the German Ocean at St. Abb's Head, and forming part of the boundary between Berwick and Haddington shires. Highest summit Lammer Law, 1733 feet.

Lam'nidæ, the porbeagles, a family of sharks.

La Motte, JEANNE DE VALOIS, COMTESSE DE, French adventuress, a descendant of the family of Valois by an illegitimate child of Henry II., and notorious for the part she played in the 'diamond necklace' fraud; born 1756, died 1791. She married the Comte de la Motte, a penniless adventurer, and settled in Paris about 1780. In the years 1783–84 the Prince-cardinal de Rohan, who had fallen into disgrace, was persuaded by her that the Queen Marie Antoinette regarded him with much favour, which would be increased if he would assist her in purchasing a valuable diamond necklace which Louis XV. had ordered for Madame du Barry, but which was still in the jeweller's hands. The cardinal fell into the snare, he agreed to stand surety for the payment, and the necklace was delivered to him. There is here yet somewhat of mystery. Cagliostro, and probably the queen also, was in the plot; the necklace disappeared, was broken up and sold, probably by the La Mottes. The jeweller, after waiting a long time for his money, applied direct to the court, and the plot was discovered. Cagliostro, the

cardinal, and others were thrown into the Bastille, but at the trial only the La Mottes were convicted. They escaped to England, where the comtesse wrote *Mémoires* implicating the queen in the fraud. She was killed by falling out of a window. Her husband lived a miserable wandering life till his death in 1831.

La Motte Fouqué. See *Fouqué*.

Lamp, a contrivance for producing artificial light, whether by means of an inflammable liquid, or of gas, or electricity; but usually the term applied to a vessel for containing oil or other liquid inflammable substance, to be burned by means of a wick. Baked earth was probably the substance of which the earliest lamps were composed, but subsequently we find them of various metals—of bronze more particularly. Modern lamps vary in form and principle widely, and of late have been constructed in a variety of materials. The requisite properties of a perfect lamp are these:—1st, It must be supplied with carbonaceous matter and with oxygen; 2d, It must convert the former into a gaseous state; and 3d, It must bring the gas so produced in contact with oxygen at such a temperature that the carbon will combine with the oxygen in the fullest degree to produce the greatest quantity of flame without any smoke. Until 1784 all the lamps in use were far from meeting all these requirements. In that year an improved scientific lamp was constructed by Aimé Argand of Geneva, and called after him the Argand lamp. In this lamp defective consumption is remedied by using a circular wick, the flame of which is nourished by an internal as well as an external current of air, and by placing a glass chimney above the flame so as to increase the draught. A special arrangement ensures a uniform supply of oil. In the improved lamps that have succeeded that of Argand, the Argand burner has generally been retained, and the alterations have chiefly been made in the mode of keeping up a uniform supply of oil. The moderator lamp, invented by M. Franchot in 1837, long held a favourite place. In it the oil is contained in a reservoir at the bottom of the lamp. The reservoir is cylindrical in shape, and in the interior there is a piston which is pushed down on the oil by a spiral spring, causing the oil to ascend in the tube in which the wick is inserted. Since the invention of this lamp various modifications have been made in it by different manufac-

turers. For petroleum, paraffin, and other mineral oils, which have of late years come into very extensive use for illuminating purposes, a very simple kind of lamp is used. The oil-vessel is placed below the burner, which usually consists of a simple slit, down which a broad wick passes into the oil. The wick may be raised or depressed by a screw, and when the lamp is burning is kept a short distance below the opening of the slit. The oil is sucked up by the wick by the action of capillarity. A chimney is fitted on to the lamp, and creates so powerful a draft that the flame is kept perfectly steady, and the gas proceeding from the heating of the oil is completely consumed. There is an endless variety of lamps of this kind, the special features aimed at being increase of light by improved burners and immunity from explosion. Safety-lamps are used for mines (see *Safety-lamp*). Hydro-carbon lamps are used for magic-lanterns, &c. The magnesium lamp, chiefly used by photographers, is one constructed for the combustion of magnesium wire. A *lantern* is a form of lamp, generally a case inclosing a light and protecting it from wind and rain, sometimes portable and sometimes fixed.

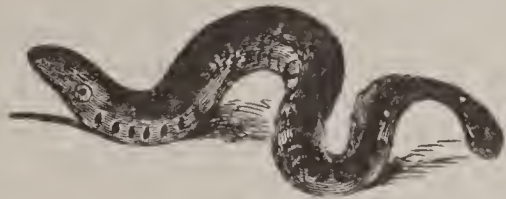
Lampblack, a fine soot formed by the condensation of the smoke of burning oil, pitch, or resinous substances in a chimney terminating in a cone of cloth. It is used in the manufacture of pigments, blacking, and printing inks. See *Carbon*.

Lampedu'sa, a small island of the Mediterranean, about midway between Sicily and the coast of Tunis. It is about 13 miles in circumference; produces wine and fruits; has a small harbour, and 1074 inhabitants. It belongs to Italy.

Lam'prey, the popular name of several species of fishes forming the genus *Petromyzon* of the order Marsipobranchii; eel-like, scaleless fishes which inhabit both fresh and salt water. The lampreys have seven spiracles or apertures on each side of the neck, and a fistula or aperture on the top of the head; they have no pectoral or ventral fins. The mouth is in the form of a sucker, lined with strong teeth and cutting plates, and the river lampreys are often seen clinging to stones by it. The marine or sea lamprey (*P. marinus*) is sometimes found so large as to weigh 4 or 5 lbs. It is of a dusky brown marbled with yellowish patches, is common round the British coasts, and is also found in the Mediterranean. It

LAMP-SHELLS — LANCASHIRE.

ascends rivers in the spring for the purpose of spawning, and was formerly much valued as an article of food. The river lamprey or lampern (*P. fluviatilis*) is a smaller species, and abounds in the fresh-water lakes



Sea Lamprey (*Petromyzon marinus*).

and rivers of northern countries. It is coloured black on its upper, and of a silvery hue on its under surface. Lampreys attach themselves to other fishes and suck their blood; they also eat soft animal matter of any kind.

Lamp-shells, the familiar designation of certain Brachiopodous Molluscs, especially those of the genus *Terebratula*, the bivalve shells of which when closed bear a close resemblance to the shape of the old Roman or classical lamp.

Lam'pyris, the genus to which the glow-worm belongs.

Lamu, an island and town on the coast of East Africa, lat. 2° 20' S., the administration of which was granted in 1889 to the Imperial British E. Africa Co. Pop. 10,000.

Lan'ark, LANARKSHIRE, or CLYDESDALE, a south-western county of Scotland, and the most populous in the country. It is bounded by the counties of Dumbarton, Stirling, Linlithgow, Edinburgh, Peebles, Dumfries, Ayr, and Renfrew; area, 564,284 acres, of which about one-third is under cultivation. It is divided into three principal districts or wards, called respectively the Upper or Southern Ward, the Middle Ward, and the Lower or Northern Ward, the last containing the greater part of Glasgow. The upper ward consists largely of mountain, moorland, and pastoral heights, several of the elevations reaching from 2000 to 3000 feet above the sea. The middle and lower wards comprise a large aggregate of arable land, woodland, and a rich tract of orchard country which has long been famous. They are also very rich in coal, iron-stone, limestone, and sandstone, which are extensively wrought. The principal river is the Clyde, which traverses the entire county from S.S.E. to N.N.W., and for the greater part of its course nearly through its centre. The contributory streams are the Douglas, Avon, and Calder, besides several others of minor

importance. The county is divided into six parliamentary divisions (Southern, Mid, N.-Western, N.-Eastern, Govan, and Partick), each returning one member. The chief towns are Glasgow, Coatbridge, Airdrie, Hamilton, Rutherglen, Motherwell, Wishaw, and Lanark, the county town, which is smaller than the others. Pop. 1891, 1,045,787.—LANARK, the town, is a royal and parliamentary burgh. It is situated on elevated ground near the right bank of the Clyde, 25 miles south-east of Glasgow. It is a very ancient place, and was erected into a royal burgh by Alexander I. Not far from Lanark are the Falls of the Clyde, in a romantic and richly wooded part of the valley, which render the town a favourite resort for tourists. It is one of the Falkirk district of parliamentary burghs. Pop. 5874.

Lan'cashire, or the county palatine of Lancaster, a maritime county in the N.W. of England, bounded by Westmoreland, Cumberland, Yorkshire, Cheshire, and the Irish Sea, a part of it in the north, called Furness, being cut off from the rest by Morecambe Bay; area, 1,207,926 acres, of which over 800,000 acres are in cultivation. The coast is of great extent, and is deeply indented by bays and arms of the sea, the principal of which are Morecambe Bay and the estuary of the Ribble. Towards the sea the land is flat, but on the east and north it becomes more elevated. The district of Furness is an integral part of the mountains of Cumberland, the highest summit being Coniston 'Old Man,' 2633 feet. The peat-mosses or bogs of Lancashire form one of its most remarkable physical features. The most extensive of these is Chat Moss (which see). The most important mineral product of Lancashire is coal, which occurs abundantly in the south and south-west. Another valuable product is the hæmatite iron ore, which occurs abundantly in the Furness district, and the output of which has increased with extraordinary rapidity of late years. Excellent freestone is quarried near Lancaster. Limestone occurs abundantly. In the north of Furness numerous quarries of blue slate are wrought, and copper occurs in Coniston Fells. Lancashire is the grand seat of the cotton manufacture, not only of England, but also of the world, Manchester being the principal centre. Woollen goods are also largely produced, as are also machinery of all descriptions, and a vast variety of other articles. Liverpool is the great ship-

ping port of the county and of England. Lancaster is the county town, but there are a great many others far larger, such as Liverpool, Manchester and Salford, Oldham, Bolton, Blackburn, Preston, &c. Lancashire is divided for parliamentary purposes into twenty-three divisions, each with one member. Pop. in 1881, 3,454,441; in 1891, 3,926,798.

Lan'caster, a municipal borough and river-port, England, the county town of Lancashire, on the left bank of the Lune, 45 miles north by east of Liverpool. It occupies the acclivities of a hill, on the summit of which stands the castle, now used as the county jail, built in the reign of Edward III., but with a keep supposed to be Saxon, and with a tower on the south-east attributed to the Emperor Hadrian. The industries comprise furniture, cordage, sail-cloth, and cotton goods, floor-cloth, oil, varnish works, railway rolling stock, &c. Pop. 1891, 31,038.

Lancaster, a city of the United States, in Pennsylvania, the capital of Lancaster county, 68 miles west of Philadelphia. It is a pleasant residential city; has very extensive manufacturing interests, and is a chief tobacco-leaf market. It is also the centre of a rich wheat district, and carries on an extensive lumber trade. Pop. 32,011.

Lancaster, a city of the United States, capital of Fairfield county, Ohio, on the Hocking River, about 32 miles S.E. of Columbus. It has iron-foundries, flouring-mills, and manufactures of machines and agricultural implements. Pop. 7555.

Lancaster, DUCHY OF, a duchy annexed to the English crown in the reign of Edward IV., and which had separate courts of its own till the passing of the Judicature Act of 1873. Its revenues go directly into the privy purse of the sovereign, and are not reckoned among the hereditary revenues surrendered for the Civil List. The revenue is over £30,000. The chancellorship is a political appointment, and the chancellor is generally a member of the cabinet. The duties are nominal.

Lancaster, HOUSE OF, the name given in English history to designate the line of kings—Henry IV. V. and VI., immediately descended from John of Gaunt, fourth son of Edward III. Edmund, second son of Henry III., was created Earl of Lancaster and Leicester. His son Thomas added Derby and Lincoln to his titles, became leader of the baronial opposition to Edward

II., and was beheaded for treason. His grandson was advanced to the dignity of a duke, and dying without male issue, the inheritance fell to his daughter Blanche, who became the wife of John of Gaunt.

Lancaster, JOHN OF GAUNT, DUKE OF. See *John of Gaunt*.

Lancaster, JOSEPH, the propagator of the educational system which is coupled with his name and that of Dr. Andrew Bell, was born in London in 1778, died at New York through a carriage accident, 1838. In 1798 he opened a school for children in Southwark, which he conducted on the Madras system, which had been previously made known by Dr. Bell. (See *Bell, Andrew*.) The principal features of the system were the teaching of the younger pupils by the more advanced students, called monitors, and an elaborate system of mechanical drill, by means of which these young teachers taught large numbers at the same time. He soon found powerful support, and was able to erect a school-house, which in 1805 was attended by 1000 children. The number of his patrons and the amount of subscriptions continuing to increase, he founded a normal school for training teachers in his system, which he now hoped to be able to extend over the whole kingdom. He made extensive tours through Great Britain and Ireland, and in 1811 had founded 95 schools, attended by 30,000 children. He was reckless and improvident in his habits; became bankrupt, and emigrated to America in 1818, where he at first received some support, but ultimately fell into poverty.

Lancaster Gun, named from the inventor, a species of rifled but not grooved cannon, having an elliptical bore, of which the major axis moves round till it traverses one-fourth of the circumference of the bore. The projectiles are also elliptical, so that when the gun is fired the projectile follows the twist of the bore, acquiring a rotary motion.

Lancasterian System of Education. See *Lancaster, Joseph*.

Lancaster Sound, a passage leading from the north-west of Baffin's Bay west to Barrow's Strait. It was discovered by Baffin in 1616, is about 250 miles long, with a central breadth of about 65 miles.

Lance, a weapon consisting of a long shaft with a sharp point, much used before the invention of firearms, and still in use. It was common among the Greeks and Romans. The Macedonian phalanx was armed

with it, and it was the chief weapon of the Roman infantry. The javelin, or *pilum*, was but secondary. The lance was the chief weapon in the middle ages, and was especially the arm of knighthood. The introduction of firearms gradually led to the disuse of the lance in the West of Europe, though it continued among the Turks, Albanians, Tartars, Cossacks, Poles, and Russians, and other Slavonic tribes. Napoleon organized several regiments of Polish lancers for service in his army, and now most of the armies of Europe have regiments of Uhlans or lancers. There are five regiments of lancers in the British army—the 5th (Royal Irish), 9th (Queen's Royal), 12th (Prince of Wales' Royal), 16th (Queen's), and 17th (Duke of Cambridge's Own). They carry a bamboo lance (9 feet long), and a sword and pistol.

Lancelet (*Amphioxus lanceolātus*), a singular fish, 2 or 3 inches long, with a slender, compressed, transparent, lance-shaped body, occurring in shoal water in the temperate and torrid parts of the earth. It forms the sole member and representative of the order Pharyngobranchii or Leptocardii. No true or paired fins are represented, and in the other parts of its anatomy the low organization of the creature is readily appreciable. The vertebral axis consists of a slender rod (*notochord*) pointed at each end, and composed of the softest of cartilage. There is no skull. The mouth is of oval shape, situated below and slightly behind the front part of the body, and there are no true jaws. It is surrounded by a ring of gristly matter, which supports small pieces of the same material; and these latter give origin to a number of delicate ciliated filaments or *cirri*. The mouth leads backwards into a very large dilated chamber representing the expanded pharynx, which performs the part of a breathing organ; and the walls or sides of the pharynx are perforated by transverse clefts or fissures, whilst the inner lining of the chamber is plentifully provided with vibratile filaments or *cilia*. Breathing takes place by the admission of water through the mouth into the dilated pharynx, the effete water passing through the slits or clefts in the sides of the sac into the cavity of the abdomen, whence it escapes outwardly by an opening known as the 'abdominal pore.' The circulation of the blood, which is destitute of colour, is performed by contractile dilatations situated upon the main blood-vessels, the heart being

a simple expansion of the principal vein. The digestive system consists of a stomach and straight intestine. This animal has been pressed into the service of recent theories regarding the origin of living beings, as tending to illustrate how the higher and Vertebrate groups of animals may have become developed from lower and Invertebrate forms. Six species in all are known, one from Australia being regarded by some as a distinct genus.

Lancelot of the Lake, the name of one of the paladins celebrated in the traditions and fables relating to King Arthur and the Round Table. According to tradition Lancelot was the son of Ban, king of Brucic, was educated by the fairy Viviana (the Lady of the Lake), and became one of the chief knights of Arthur's court. His love for Genevra, or Guinevere, the beautiful wife of Arthur, and his disregard of Morgana, a fairy, and the sister of Arthur, placed the knights in the most dangerous and marvellous situations, from which, however, he always extricated himself by his valour and the assistance of the Lady of the Lake. *Le Roman de Lancelot du Lac*, a famous mediæval romance, compiled by Walter Mapes (1150–96), has appeared in many forms. Lancelot is one of the chief figures in Tennyson's Idylls.

Lancerote. See *Lanzarote*.

Lancers. See *Lance*.

Lancet Window, a high and narrow window with an acutely arched top. Lancet windows are a marked characteristic of the early English style of Gothic architecture, and are in a great degree peculiar to England and Scotland. They are often double or triple, and sometimes five are placed together, as in the window called the 'Five Sisters' at York. See *Early English*.

Lancewood, the popular name of the wood of several trees of the order Anonaceæ, as of the *Oxandra virgata*, a native of Jamaica, *Duguetia quitarensis*, a native of Cuba and Guiana, which possesses in a high degree the qualities of toughness and elasticity, and is on this account extremely well adapted for the shafts of light carriages, and all those uses where light, strong, but elastic timber is required.

Lanciano (lân-châ'nō), a town of Southern Italy, in the province of Chieti (Abruzzo-Citeriore), the see of an archbishop. Pop. 8760.

Land forms an important kind of natural wealth susceptible of appropriation, and

forming at the same time the principal deposit of the accumulated capital derived from the labour of preceding generations. In Britain, from various causes, among others the enormous cost of transfer, the land is in the hands of comparatively a few owners, and the properties are generally large. One-half of the land of the United Kingdom is in the hands of 7400 individuals; the other half being owned by 312,500 individuals. Barely one in a hundred of the population owns more than an acre of soil. The cultivable land is usually let out to tenant-farmers, who cultivate it at their own expense. These number upwards of 1,160,000 in Great Britain and Ireland, more than three-fourths of whom occupy farms of less than 15 acres. In the British colonies small properties rather than large is the rule. In France there are about 3,000,000 properties under 25 acres, and only 150,000 above 100 acres; 1,750,000 of the population cultivate their own land. Small holdings cultivated by the owners are common in Germany, Belgium, Switzerland, Denmark, Norway, Sweden, and other parts of Europe. The land question in Britain has of late been the subject of much political agitation, and schemes of land nationalizing and other extreme remedies to prevent anomalies have been advocated, but a practical reform of a wide and comprehensive character has yet to be devised and carried out.

Land, TENURE OF. The various species of tenures and customs relating to property in land are noticed under the particular heads. See *Allodium*, *Feudal System*, *Freehold*, *Copyhold*, *Entail*, &c.

Landau (län'dou), a town of Rhenish Bavaria, on the river Queich, 47 miles N.N.E. of Strasburg. It was formerly strongly fortified, and has been the scene of many stirring events. Pop. 9395.

Land-crabs, crabs so called from their semi-terrestrial mode of life; their habits leading them to live on land, and away from the sea, even for considerable periods of time. The true land-crabs (genus *Gecarcinus*) occur in Asia, particularly in the Eastern Archipelago; in America, and specially in the West Indian Islands; and in Australia also. The best-known species is *G. ruricola*, found in the higher parts of Jamaica, which often proves very destructive to the sugar plantations. The crabs of the genus *Cardisoma*, represented by the common species *C. carnifex*, and inhabiting the West In-

dian mangrove swamps and marshes, appears to feed upon both vegetable and animal diet. Among other species of land-crabs may be enumerated the sand-crabs (*Ocypoda*), the beckoning or calling crabs (*Gelasini*), and the *Thelphusæ*, which inhabit fresh-water streams, but appear to be equally at home when on land.

Lander, RICHARD, African traveller, born at Truro 1804, died 1834. He accompanied Captain Clapperton on his last expedition as servant, and in 1830 he set out with his brother John (1807-39) on an exploring expedition under the auspices of the British government. He was able to lay down with approximate correctness the lower course of the Niger, and proved that it entered the sea by several mouths at the Bight of Benin. In the beginning of 1834, while on a trading expedition in the delta of the Niger, he was wounded by the natives, and though he was able to reach Fernando Po, he died soon after. He published *Records of Captain Clapperton's last Expedition in Africa*, with R. Lander's Journal, 1829; *Journal of an Expedition to Explore the Course and Termination of the Niger*, 1832.

Landerneau (län-der-nō), a seaport of France, dep. Finistère, 13 miles north-east of Brest. Pop. 7889.

Landes (länd), a term specifically applied in France to extensive level and largely barren tracts stretching from the mouth of the Garonne along the Bay of Biscay and from 60 to 90 miles inland, bordered with sand-hills next the sea. They bear chiefly heath and broom, but on the seaward side are largely planted with the maritime pine, and considerable stretches have been reclaimed. The inland plains are chiefly occupied as sheep-runs. The inhabitants lead a sort of nomadic life. The landes are dry in summer and marshy in winter, and stilts are much used in traversing them.

Landes, a maritime department of France, bounded by the Bay of Biscay and by the departments of Gironde, Lot-et-Garonne, Gers, and Basses-Pyrénées. It has an area of 3599 square miles. It contains three arrondissements, Mont-de-Marsan (the capital), Dax, and St. Sever. Forests are extensive, and are gradually taking the place of the *landes* (see above art.). The fertile lands consist chiefly of the alluvial valleys to the south of the Midouze and the Adour. The *dunes*, a sandy tract covered with pines, stretches along the coast of the department to a depth of about 3 miles. The

vine is cultivated to a considerable extent in the fertile districts. Pop. 1891, 297,842.

Landeshut (lân'des-hüt), a town of Prussia, in Silesia, district of Liegnitz, in a beautiful valley at the foot of the Riesengebirge. Pop. 7106.

Landgrave (German, *Landgraf*), in Germany, originally, about the 12th century, the title of district or provincial governors deputed by the emperor, and given them to distinguish them from the inferior counts under their jurisdiction. Later, the title of three princes of the empire, whose territories—Thuringia, Lower and Higher Alsace—were called landgraviates.

Land League, an organization projected by Mr. Parnell, the leader of the Irish national movement, in 1879, the ostensible object of which was to purchase the land of Ireland for the people of Ireland. Funds were largely subscribed, especially in America, but the stringent rules against landlords and tenants holding aloof from it, and the alleged complicity of its members with many terrible outrages, caused it to be suppressed in 1881. After the suppression of the Land League a political and agrarian organization called the *National League* was formed. Its main objects are understood to be the reform of the land laws, the weakening of the power of the landlords, the increase of peasant proprietors, and the establishment of some kind of independent or semi-independent government for Ireland.

Landlord and Tenant. The landlord in relation to a tenant is the person from whom lands or tenements are taken on lease (see *Lease*), or by some other contract or agreement. The tenant is the person who holds lands or tenements of another by any kind of contract or agreement, usually for a periodical rent. In England houses may be let on a verbal agreement for any period not over three years. The tenant is responsible for all taxes and rates except the land tax and property tax, which may be deducted from the rent when they are paid by the tenant. In the absence of express agreement a tenant may sublet the property, but he is still liable to the landlord for the rent, unless the landlord relieves him by accepting the sub-tenant as a tenant-in-chief. Fixtures at the expiration of the lease belong to the lessor, and cannot be removed. Rent may be recovered by action at law, by ejectment, or by distress on the premises. In Scotland a verbal contract holds good only for a year. The landlord is responsible

for maintaining a house in a fit state of repair, and if he neglects to do so the tenant may withhold the rent or deduct the expense of repairs. The tenant who takes a house is held bound to furnish it, and the landlord has a hypothec over the furniture for rent occurring before the term of payment has arrived, and may prevent its removal, but he has no lien over the goods of a sub-tenant who has paid his rent to his immediate landlord.

Landon, LETITIA ELIZABETH, English poetess, better known by her initial signature of L. E. L., was born in 1802; died at Cape Coast Castle, 1839. She wrote much for the then fashionable annuals, and the romantic gloom and melancholy of her verses gave them a charm for many people. In 1838 she was married to a Mr. George MacLean, and sailed with him to Cape Coast Castle in Western Africa, where he was governor. She died there soon after her arrival, from an accidental over-dose of prussic acid, which she had been in the habit of using medicinally. Her chief works are: *The Improvisatrice*; *The Troubadour*; *The Golden Violet*, &c.; *The Venetian Bracelet*, &c.; *The Lost Pleiad*; *Ethel Churchill*, a novel; and *Romance and Reality*, a novel.

Landor, WALTER SAVAGE, an English poet and prose writer, born at Ipsley Court, Warwickshire, 1775; died 1864. He was educated at Rugby and Oxford, from both of which he was expelled for unruliness. He published a small volume of poems in 1795, and a lengthy poem, *Gebir*, in 1798. This latter he subsequently translated into Latin verse, being one of the most accomplished Latinists of his time. He succeeded to a large property on the death of his father, but he soon sold it off, determining to live abroad. In 1808 he raised a body of men at his own expense for the defence of Spain against France. In 1811 he married a Miss Thuillier of Bath, and settled at Florence, where many of his works were written. Having separated from his wife he returned to England in 1835. In 1857 the publication of some ugly slanders against a lady of Bath led to a prosecution for libel, and Landor was brought in for £1000 damages. He left England, and once more found a resting-place in Florence, where he died. His fame chiefly rests on his *Imaginary Conversations*, between celebrated persons of ancient and modern times, which is a model of a pure, vigorous, finished English style. Among

his other works are *Count Julian*, a tragedy; *Hellenics* or Greek poems; *Pericles* and *Aspasia*, imaginary letters; *Pentameron* and *Pentalogue*; and the dramas *Andrea of Hungary* and *Giovanna of Naples*. His biography has been written by John Forster.

Landrail, or CORN-CRAKE. See *Corn-crake*.

Landrecies (lân-dr-sē), or LANDRECY, a small French town, on the Sambre, dep. of Nord. It was formerly fortified, and played an important part in the French wars. Pop. 3794.

Landsberg, a town of Prussia, province of Brandenburg, and 37 miles north-east of Frankfurt, on the Wartha. It has manufactures of engines and boilers, carriages, woollens, tobacco, spirits, &c. Pop. 24,893.

Landscape, a term applied to a portion of land or territory which the eye can comprehend in a single view, and to a painting of such. See *Painting*.

Landscape Gardening is the art of laying out grounds, arranging trees, shrubbery, &c., so as to bring into harmonious combination all the varied characteristics and surroundings. It disposes flowering plants, shrubs, and trees over varying levels in such a manner as to produce the most pleasing effects, it shuts out undesirable views by means of judicious planting, and introduces rock-work, water, and other artistic embellishments where the local peculiarities of the ground permit.

Landseer, SIR EDWIN, painter, born in London 1802, died 1873. He began to draw animals when a mere child; at thirteen he exhibited at the Academy, and the year following became a student. Henceforward he exhibited regularly at the Academy and the British Institution. In 1826 he was elected A.R.A.; in 1830, R.A.; in 1850 he was knighted, and in 1865 he declined the presidency of the Academy. He takes the very highest rank among animal painters; and though he has been blamed for introducing too human a sentiment and expression into some of his animals, the humour and pathos of animal nature has had no finer exponent. Among his best-known works are: *The Cat's Paw* (1824); *The Return from Deer-stalking* (1827); *High Life, and Low Life* (1831); *A Jack in Office* (1833); *Highland Drover Departing for the South* (1835); *Bolton Abbey in the Olden Time* (1837); *The Return from Hawking* (1837); *The Shepherd's Chief Mourner* (1837); *A Distinguished Member of the Humane Society* (1838); *There's Life in the Old Dog Yet*

(1838); *Laying Down the Law* (1840); *Defeat of Comus* (1842); *Shoeing* (1844); *The Stag at Bay* (1846); *A Dialogue at Waterloo* (1850); *Monarch of the Glen* (1851); *Titania and Bottom* (1851); *Swannery invaded by Sea-eagles* (1869); the celebrated work of sculpture the *Lions* at the base of Nelson's Monument, Trafalgar Square, London, &c.—CHARLES LANDSEER, brother of the above (born 1799, died 1879) had a good reputation as a painter of subjects from English history and poetry. He was chosen Academician in 1845, and keeper of the Academy in 1851.—THOMAS LANDSEER, brother, born 1795, died 1880; was celebrated as an engraver, and made many reproductions of his brother's works.—JOHN LANDSEER, engraver, father of the above, born 1769, died 1852. He was elected associate engraver of the Academy, 1807; lectured on, and published several treatises on art.

Land's End, a headland in Cornwall, forming the south-western extremity of England (lat. 50° 6' N., lon. 5° 45' W.). There is a lighthouse on the rocks, called Longships, about a mile to the west.

Landshut (lants'höt), a picturesque old town of Bavaria, on the Isar, 38 miles N.E. of Munich. It has many interesting buildings, among which are St. Martin's Church, a fine Gothic structure built in 1407-77, with a steeple 462 feet high; the royal palace, the town-house, and the old castle of Trausnitz. Landshut has manufactures of leather, starch, machinery, carriages, tobacco, paper, &c. It formerly had a university, transferred in 1800 from Ingolstadt, but removed to Munich in 1826. Pop. 17,873.

Landshut, a town of Prussia. See *Landeshut*.

Landskrona, a seaport of Sweden, län Malmö, on a tongue of land projecting into the Sound, 18 miles N.N.E. of Copenhagen. Its harbour is the best on the Swedish coast of the Sound. Pop. 1891, 12,491.

Landslip, the slipping or sliding of a considerable tract of land or earth from a higher to a lower level. Landslips are due to a variety of causes, chiefly the decay of supporting strata, or excessive saturation of the soil by rain. Among the more disastrous occurrences of this kind are the slip of the Rossberg Mountain behind the Rigi in Switzerland in 1806, burying villages and hamlets with over 800 inhabitants; and that at Naini Tal, a sanitary hill-station in the Himalayas, in 1880, when 230 lives were lost.

Landsturm (lânt'sturm), a local militia of Germany, which is never called from its own district but in case of actual invasion. It comprises that portion of the reserve too old for the *Landwehr* (which see). Other European nations have a force of the same nature.

Land-surveying. See *Surveying*.

Land-tax, a tax levied on land. What is known as the land-tax in Britain was imposed in the reign of William III. as a substitute for escuage, talliage, fifteenths, and other contributions. It was imposed annually from 1693 to 1798 at a varying rate, oftenest 4s. per pound. In the latter year it produced about £2,000,000, when it was replaced by a perpetual rent charge on land, with power of redemption, and a tax annually imposed on personal property, the latter tax abolished in 1833. The land-tax now produces rather more than £1,000,000 annually.

Landwehr (lânt'vār), that portion of the military force of Germany and other European nations which in time of peace follow their ordinary occupations, excepting when called out for occasional training. The landwehr in some respects resembles a militia, with this important difference, that all the soldiers of the landwehr have served in the regular army. This system has received its fullest development in Germany, in which country it adds enormously, and at comparatively little cost, to the military power of the state.

Lane, EDWARD WILLIAM, Arabic scholar, son of Dr. Theophilus Lane, prebendary of Hereford; born 1801, died 1876. He was intended for the church, but formed a strong desire to visit Eastern countries, and turned his attention to the study of Oriental languages. He made two long visits to Egypt, living like an Oriental, his singular tact in accommodating himself to the Eastern character giving him great insight into the modes of Eastern life and thought. His works, which are highly valued, comprise *Manners and Customs of the Modern Egyptians*; a translation of the *Arabian Nights*, with valuable notes; *Selections from the Koran*; and an unfinished *Arabic Lexicon*.

Lanfranc, Archbishop of Canterbury, son of a wealthy citizen of Pavia; born 1005, died 1089. He became a monk of the Benedictine abbey of Bec in 1042, and prior in 1046. In 1062 William of Normandy made him abbot of Caen, and after the Conquest

he became archbishop of Canterbury (1070). He did much to purify and reform the church, at the same time preserving its insular independence. He enjoyed the confidence of William I., and promoted the peaceable succession of William Rufus, under whom he exercised the chief authority till his death. His writings were printed in 1647, and again at Oxford in 1844.

Lanfrey (lân-frâ), PIERRE, French historian, born 1828, died 1877. His life was entirely literary till the outbreak of the Franco-German war, when he joined the *garde mobile*. He was elected a member of the assembly in 1871, was ambassador to Switzerland in 1873, and made life-senator in 1875. His chief work is his *History of Napoleon I.*, in which he endeavours with unsparing pen to paint the man as he really was.

Lang, ANDREW, miscellaneous writer, born at Selkirk 1844; educated at Edinburgh Academy, St. Andrew's University, and Balliol College, Oxford, where he took a distinguished position. A most versatile writer, he has published several volumes of ballades and other light verse; *Custom and Myth*, a valuable contribution to the science of comparative mythology; the article *Mythology* in the *Encyclopædia Britannica*; translations of Homer (with other collaborators) and of Theocritus; &c. He is a frequent contributor to the daily press and to periodical literature, and edits *Longman's Magazine*.

Lange (lang'è), JOHANN PETER, German theologian, born 1802, died 1884. He studied theology at Bonn; was appointed professor of theology at Zürich in 1841, and at Bonn in 1854. His chief works, *Life of Jesus*, *Christian Dogmatics*, *Apostolic Age*, &c., have been translated into English, including the work well known under the title of *Lange's Commentary*.—FRIEDRICH ALBERT LANGE, son of the above, born 1828, died 1875, is author of a *History of Materialism*, and other philosophical works.

Langeland, an island of Denmark between Laaland and Fünen, about 30 miles in length and from 3 to 5 in breadth; area, 103 sq. miles; pop. about 20,000. This island is fertile in every part. Rudkjöping is the chief town.

Langensalza (lâng'en-zâl-tsâ), a town of Prussia, in the province of Saxony, 18 miles north-west of Erfurt, on the Salza. It is a busy place, with cloth and other factories. Three battles have been fought in the vi-

cinity, in 1761, 1813, and 1866, the Hanoverians being defeated by the Prussians in the last. Pop. 10,924.

Langholm (lang'om), a market town of Scotland, Dumfriesshire, on the Esk, 30 miles east by north of Dumfries. It consists of two parts—Old Langholm on the E. bank of the Esk and New Langholm on the W. bank, and is celebrated for its sheep fairs and its woollen manufactures. Pop. 4209.

Langhorne, JOHN, D.D., English poet and miscellaneous writer, born 1735, died 1779. He published numerous poems, but his chief work, done in conjunction with his brother William (1721–72), is a translation of Plutarch's *Lives*, which still holds a good position. He was prebend of Wells Cathedral at his death.

Langlande, or **LONGLAND, WILLIAM**, the supposed author of the English poem *The Vision of William concerning Piers Plowman*, was born about 1332 perhaps at Clebury-Mortimer, Shropshire; and is traditionally reported to have been a secular priest, educated at Oxford. From internal evidence it is gathered that the poem, in its earliest form, was composed about 1362. Its rhythmical structure depends upon alliteration, which forms a substitute for rhyme. The poem is allegorical in form and satirical in spirit; the trials and troubles of life generally, but more particularly the corruptions of the church and the worldliness of the ecclesiastical order, are its theme. The *Crede* of *Piers Plowman* is an imitation of Langlande's work which appeared about the end of the 14th century. It is written by a follower of Wickliffe. There are three chief texts of *Piers Plowman*, to which are assigned the respective dates of 1362, 1377, and 1393. These have all been published by the Early English Text Society (1867, 1869, and 1873) under the editorship of Mr. Skeat. *Piers Plowman*, besides being of value for its pictures of old English life, is of very great importance for the study of English in its earlier forms. Langlande is said also to be author of a poem written in 1399, which Skeat has titled *Richard the Redeles*.

Langobardi. See *Lombards*.

Langres (lân-gr), a town in France, department of Haute-Marne, near the left bank of the Marne, 17 miles S.S.E. of Chaumont. It occupies a steep hill commanding the entrance from the basin of the Saône into that of the Seine, and is a fortress of the first class. It has a cathedral, chiefly

Romanesque but partly Gothic, dating from the 12th century. Pop. 7157.

Langtoft, PIERRE DE, English historian, canon of Bridlington, Yorkshire, in the reigns of Edward I. and Edward II., author of a Norman-French chronicle of England to the end of the reign of Edward I. It has been published in the *Rolls Series*, and was translated into English rhyme by Robert de Brunne.

Langton, STEPHEN, English cardinal, and Archbishop of Canterbury in the reign of John, born about 1150. In 1206 Innocent III. created Langton a cardinal and nominated him to the see of Canterbury, consecrating him archbishop next year. King John refused to accept him, and it was after England had been placed under an interdict and John excommunicated and threatened with deposition that he yielded. Langton was acknowledged in July 1213, and in August he joined the insurgent barons, and acted with them in compelling John to sign *Magna Charta*. He crowned Henry III., and in 1223 he demanded of him the full execution of the charter. He was the author of some theological treatises. He died 9th July, 1228.

Language. See *Philology*.

Languedoc (lân-gê-dok), one of the old provinces of Southern France, now forming the departments of Aude, Tarn, Hérault, Lozère, Ardèche, and Gard, as well as the arrondissements of Toulouse and Villefranche, in the department of Haute-Garonne; and the arrondissements of Puy and Yssingeaux, in the department Haute-Loire. As to the name see next article.

Langue d'oc (lân-gê-dok), the name given to the independent Romance dialect spoken in Provence in the middle ages, from its word for *yes* being *oc*, a form of the Latin *hoc*. It was thus distinguished from the language spoken by the natives of the north of France, which was called *Langue d'oui* or *Langue d'oïl*, their affirmative being *oui* or *oïl*. The *langue d'oc* was the language of the Troubadours, and is known also as *Provençal*.

Laniidæ (lan'i-i-dæ), the shrikes, a family of insectorial or perching birds. See *Shrike*.

Lan'kester, EDWIN, English physician and scientist, born 1814, died 1874. He graduated M.D. at Heidelberg in 1839, and held various offices in the London medical schools and museums. He was for long coroner of Middlesex, and contributed largely to magazines and scientific journals.—His

son, EDWIN RAY LANKESTER, born 1847, was educated at Oxford, and appointed professor of zoology and comparative anatomy at University College, London, in 1874. He has published many scientific memoirs.

Lanner, the *Falco lanarius*, a species of hawk, especially the female of the species, the male being called a *lanneret*. It is a native of Southern Europe, North Africa, and South-west Asia, and was much valued in falconry.

Lannes (làn), JEAN, Duke of Montebello and Marshal of France, was born in 1769; mortally wounded at the battle of Essling, 1809. Originally a dyer, he enlisted into the army in 1792, and served in Spain and Italy, where he attained the rank of brigadier-general. He accompanied Napoleon to Egypt in 1798, gained the victory at Montebello in Italy in 1800, and bore a chief part at Marengo. He had a chief command at Austerlitz, Jena, and Friedland (1805-6-7); in 1808 marched into Spain and captured Saragossa. He was then ordered to Austria, where he rendered brilliant services.

Lansdowne, HENRY CHARLES KEITH FITZ-MAURICE, MARQUIS OF, was born 1845, and succeeded to the marquisate in 1866. He was a lord of the treasury from 1868 to 1872, and subsequently under-secretary for war and for India. In 1883 he became governor-general of Canada, and at the end of his term (1888) viceroy of India.—WILLIAM PETTY, first marquis, better known as Earl of Shelburne, born 1737, died 1805. He began political life in 1763; became prime-minister in 1782, but was driven from power by the Fox and North coalition. In 1784 he was made Marquis of Lansdowne.—His second son, LORD HENRY PETTY, born 1780, died 1863. He succeeded his brother as Marquis of Lansdowne in 1809; was a successful debater in parliament, generally acting with the Whig party. In 1827 he was home secretary; from 1831 to 1841 president of the council. He was leader of the opposition in the House of Lords from 1841 to 1846, when he entered the cabinet of Lord John Russell as president of the council. In 1852 he declined the premiership.

Lansing, a town of the United States, capital of Michigan, on Grand River, 85 miles N.W. of Detroit. It contains a large and handsome state-house, an agricultural college, &c., and is an important manufacturing centre. Pop. 1890, 13,102.

Lansingburgh, a town, United States, New York, Rensselaer county, on the east bank of the Hudson, nearly opposite its confluence with the Mohawk. Pop. 10,550.

Lantern. See *Lamp*.

Lantern, in architecture, (1) an erection on the top of a dome, on the roof of an apartment, or in similar situations, to give light, to promote ventilation, or to serve as a sort of ornament. (2) A tower which has the whole or a considerable portion of the interior open to view from the ground, and is lighted by an upper tier of windows, such as the towers commonly placed at the junction of the cross in a cruciform church; also a light open erection on the top of a tower.

Lantern-flies, insects allied to the cicadas, but forming a family by themselves, the Fulgoridæ. They are remarkable for the prolongation of their forehead into an empty vesicular expansion. The lantern-fly proper (*Fulgōra lanternaria*) is a native of South America. It is more than 3 inches in length, and 5 across the wings. It has been asserted that it emits a strong light from the inflated expansion of the forehead, but the evidence of this luminosity is more than doubtful. They are in fact reported to fly only during sunlight and not to appear abroad during dark. A Chinese species has, on equally equivocal testimony, been called *F. candelaria*.

Lantha'nium, LAN'THANUM (Sym. La. At. wt. 92), a rare metal associated with didymium in the oxide of cerium, and so named from its properties being concealed (Gr. *lanthanein*, to lie hid), as it were, by those of cerium. Lanthanum forms only one series of compounds, such as the oxide, chloride, and sulphide.

Lanzarote (làn-sà-rō'tā), the most north-eastern of the Canary Isles; greatest length, 36 miles; mean breadth, 15 miles. Its coast is generally bold, and the hills in the centre rise to an elevation of 2000 feet. The island is of volcanic origin, and one volcano is still active. Pop. 17,485.

Lanzi (làn'tsē), LUIGI, Italian archæologist, born 1732, died 1810. He entered the order of the Jesuits in 1749, and was professor of the humanities in several colleges. He became assistant director of the gallery at Florence, and devoted his energies to archæological and artistic research. His chief works are a Treatise on the Etruscan and other ancient languages of Italy, and the History of Italian Painters, an esteemed

work which has been translated into English by Roscoe.

Laocoon (lā-ok'o-on), in ancient Greek legend, a priest of Poseidon (Neptune), among the Trojans, who, along with his two sons, was killed by two enormous serpents sent by Apollo. The story has frequently furnished a subject to the poets, but it is chiefly interesting as having served as the subject of one of the most beautiful groups of sculpture in the whole history of ancient art. It was discovered at Rome among the ruins of the palace of Titus in 1506, and is now placed in the Vatican. It is supposed to be the group described by Pliny as the work of three sculptors of Rhodes, a father and two sons, Agesander, Polydorus, and Athenodorus, but doubts exist as to its date.

Laodice'a, the ancient name of several places in Asia Minor. One of these, now called *Eski Hissar* (Old Castle), 120 miles E.S.E. of Smyrna, was the site of one of the seven primitive Christian churches of Asia. Another is now known as *Latakia*.

Laon (lān; ancient, *Bibrax Suessionum*), a fortified town in France, capital of the department Aisne, 74 miles north-east from Paris. It is situated on a height in the midst of a level country, and has interesting old buildings, especially the former cathedral, dating from the 12th century. Laon was the seat of a bishopric as early as 500 A.D., and was made the capital of his kingdom by Charles the Simple of France about 900. Bonaparte was defeated here in 1814. On the 9th September, 1870, it surrendered to the Germans without a blow being struck. Pop. 12,636.

La'os, a territory in the Indo-China peninsula surrounded by the Shan States, Anam, Tonquin, and the Chinese province of Yun-nan. Its extent and the number of its inhabitants are unknown, but they have been estimated at one and a half million. The country is intersected by mountain ranges and traversed by the Me-kong or Cambodia river, the alluvial valley of which produces abundant sugar, rice, tobacco, &c. Laos exports to the neighbouring states a considerable quantity of ivory, gold, silver, precious stones, silk, &c. The inhabitants are reported to be connected with the Burmese in their racial, social, and religious peculiarities. The capital is Chieng-Mai.

Lao-tze, or LAO-TSEU, sometimes also called LAO-KIUN, a celebrated Chinese philosopher, founder or reformer of one of the most ancient and important religious sects

of China, known as the Tao, or sect of reason. Born about the year 600 B.C., we learn that he was historiographer and librarian to a king of the Chow dynasty; that he travelled to the borders of India, where he may have become acquainted with Buddhism; that he met Confucius and reproached him for his pride, vanity, and ostentation; that he was persuaded to record his doctrines in a book, which he did in the Tao-ti-king or The Path to Virtue; that on completing this task he disappeared into the wilderness, and there, it is said, ascended to heaven. According to him silence and the void produced the Tao, the source of all action and being. Man is composed of two principles, the one material and perishable, the other spiritual and imperishable, from which he emanated, and to which he will return on the subjugation of all the material passions and the pleasures of the senses. Lao-tze's moral code is pure, inculcating charity, benevolence, virtue, and the free-will, moral agency, and responsibility of man. From the insight and deep wisdom of his moral code it has been supposed that Lao-tze had been indebted to western teaching, but there is no clear proof of this. Since the 2d century of our era the sect has continued to extend over China, Japan, Cochin-China, Tonquin, and the Indo-Chinese nations.

La Paz, or LA PAZ DE AYACUCHO, a town of Bolivia, capital of a department of the same name. The city is built in amphitheatre form, is the seat of a bishopric, and has a cathedral and university. It is a place of considerable wealth and importance. Most of the inhabitants are Aymara Indians, or of mixed race. Pop. 80,000.—The department has an area of 45,000 square miles and a population estimated at 642,650.

La Pérouse (pā-rös), JEAN FRANÇOIS GALAUP, COMTE DE, a French navigator, born in 1741. He entered the naval service at an early age, and during the American war received command of an expedition sent to Hudson's Bay, where he destroyed the trading stations of the British. In 1785 he left France in charge of an exploring expedition to the Pacific, and having visited parts of its western and eastern coasts and sundry of its islands the expedition arrived in Botany Bay in 1788. Here La Pérouse left a letter, in which he declared his intention to proceed to the Isle of France, but nothing more was heard of the unfortunate explorer. Latterly, however, it was discovered that

LAPIS LAZULI — LAPLAND.

his two vessels, the *Boussole* and *Astrolabe*, struck on a reef at Mallicolo in the New Hebrides, and that the crews were all either drowned or murdered.

Lapis Laz'uli, an aluminous mineral of a rich azure-blue colour; lustre vitreous; fracture uneven; scratches glass; opaque; easily broken; specific gravity, 2.45. The finest specimens are brought from China, Persia, and Central Asia, and it is much esteemed for ornamental purposes, especially for inlaid

work. From it the pigment called ultramarine is prepared, but this is now also manufactured artificially.

Laplace (là-pläs), PIERRE SIMON, MARQUIS DE, a celebrated French mathematician and astronomer, born 1749, died 1827. At an early age he showed wonderful aptitude in mathematical studies; became professor of mathematics in his native town; subsequently sought fortune in Paris, and there made the acquaintance of d'Alembert.



Laplanders.

Under his guidance the youth soon signalized himself by discovering the invariability of the mean distances of the planets from the sun. He was appointed examiner of the royal corps of artillery, and at the early age of twenty-four was admitted into the Academy of Sciences. Besides his mathematical work he was associated with Lavoisier in chemical research. During the revolution Laplace was an extreme republican, and in 1799 he was nominated to the ministry of the interior—a position which he filled so badly that he was superseded in six weeks. Receiving the patronage of Bonaparte he was made president of the senate, and in 1806 raised to the dignity of count of the empire. Notwithstanding these favours he deserted the emperor in 1814, voted for the establishment of a provisional government, and was rewarded by the Bourbons with the title of marquis. In 1816 he was named a member of the French Academy. Almost any one of Laplace's original researches is

alone sufficient to stamp him as one of the greatest of mathematicians. The discovery of the invariability of the major axes of the planetary orbits, the explanation of the great inequality in the motions of Jupiter and Saturn, the solution of the problem of the acceleration of the mean motion of the moon, the theory of Jupiter's satellites, and other important laws are due to Laplace. The most important of his works are the *Mécanique Céleste*; *Système du Monde*, a *resumé* of all modern astronomy; *Théorie analytique des Probabilités*; *Essai sur les Probabilités*.

Lap'land, the land of the Lapps, an extensive territory in the north of Europe, stretching between lat. 64° and 71° N., and from the shores of Norway east to those of the White Sea; area about 130,000 square miles, of which more than a half belongs to Russia, and the remainder is shared, in nearly equal proportions, between Sweden and Norway. The climate for nine months of a dark winter is excessively cold; spring

and autumn are short; and the summer of two months, when the sun never sets, is extremely hot. Vegetation is scanty except in the form of birch, pine, fir, and the abundant mosses which supply food for the herds of reindeer. The Lapps belong to the Finnic branch of the Turanian family. They are a small, muscular, large-headed race, with high cheek-bones, wide mouth, flat nose, and scanty beard. Many of them are nomadic, owing their subsistence to their herds of reindeer; others support themselves by fishing. They are generally ignorant, simple-hearted, and hospitable. The Norwegian Lapps belong to the Lutheran, and the Russian Lapps to the Greek Church. Their numbers do not exceed 27,000.

La Plata. See *Argentine Republic*.

La Plata, a city of the Argentine Republic, situated on the shores of a fine natural harbour called Ensenada, in the La Plata estuary, 40 miles below the city of Buenos Ayres, and connected with it by rail. Although recently founded as the capital of Buenos Ayres province, it has already become an important commercial centre, having a palace for the legislative assembly, a cathedral, law courts, theatre, public park, &c. Pop. estimated at 40,000.

Laporte, a city of the United States, capital of Laporte county, Indiana, 50 miles south-east of Chicago. The neighbourhood has become a favourite resort of summer visitors on account of its beautiful lakes. Pop. 1890, 7126.

Lappenberg, JOHANN MARTIN, a German historian, was born in Hamburg 1794, died 1865. Sent by his father to study medicine at Edinburgh, he gave his attention to history and political science, and spent some time in London studying the English constitution. Returning to Germany he continued his studies in Berlin and Göttingen. He was made archivist of Hamburg in 1823, a post which he held till 1863. He became a member of the senate in 1848, and was appointed plenipotentiary to Frankfort in 1850. His most remarkable work is his *History of England under the Anglo-Saxon and Norman Kings*.

Lapwing, a bird belonging to the family of plovers and order Grallatores. The common lapwing (*Vanellus cristatus*), a well-known British bird, is about the size of a pigeon; it is often called the *peewit* from its particular cry. In the breeding season these birds disperse themselves over the interior of the country, where they lay their

eggs in a small depression of the ground, in cultivated fields, moors, &c. In winter they retire to the sea-coast. Their eggs are es-



Lapwing (*Vanellus cristatus*).

teemed a great luxury, and great numbers are annually sent to the London markets.

Laraiche (lâ-râsh'), or EL ARAISH, a seaport of Morocco. Pop. about 4000.

Laramie, a city in Albany co., Wyoming. Pop. 1890, 6388.

Lar'amie Mountains, a range of the U. States, which extends through Wyoming and Colorado, and bounds the Laramie Plains on the east and north-east. The highest point is Laramie Peak, 10,000 feet high.

Larboard, the left side of a ship looking towards the stem, now called the *port* side.

Lar'ceny is the fraudulent appropriation of the personal property of another person without that person's consent. To constitute this crime the removal of the goods to any distance is not necessary, but it requires to be shown that the article has completely passed, for however short a time, into possession of the criminal. Concerning the kinds of things the appropriation of which is larceny, the common law restricted them to personal property as distinguished from real estate, but this distinction has been largely abolished by recent statutes. Larceny was formerly divided into two kinds, grand and petty, which was determined by the value of the thing stolen, but the distinction is now abolished in almost all the States; but, generally, in ordinary cases, a person convicted of larceny is liable to imprisonment with hard labour for not more than two years; on a second conviction not more than ten, nor less than four.

Larch, the common name of trees belonging to the genus *Larix*, nat. order Coniferae, having deciduous leaves, small erect oval blunt-pointed cones, and irregularly margined scales. This genus is now usually united to *Abies*. The common

larch (*L. europæa*), though a native of Italy, Switzerland, and South Germany, is one of the most frequently cultivated trees in Britain, and is remarkable for the elegance of its conical growth, and the durability of its wood, which is used for a variety of purposes. Besides the common larch, there are the Russian larch, the red larch, and the black larch (*L. americana*), a native of America. The last species has also the name of *hackmatack* or *tamarack*.

Lard is obtained from the fat of swine when it is heated to boiling point and then strained. It is chiefly composed of oleine and stearine, and is now largely used in the manufacture of candles, soap, pomades, &c. The best quality is found in the fat which surrounds the kidneys, and this is employed in pharmacy for the preparation of unguents. When subjected to pressure the oleine is liberated, forming lard-oil, which is much used as a lubricant for machinery.

Lardiz'abala'ceæ, a nat. order of plants, natives of South America and China, now regarded as a tribe of the Berberidaceæ or barberberries.

Lardner, DIONYSIUS, popular writer on scientific subjects, born in Dublin 1793, died 1859. Educated at Trinity College, he devoted his attention to science, contributed to the leading cyclopedias, and in 1827 was appointed to the chair of natural philosophy and astronomy in the University of London. Having been convicted in the law courts of immorality, he withdrew to America, but returned in 1845 and resided in Paris.

Laredo, Webb co., Texas, southern terminus of International and Great Northern Railroad. Pop. 1890, 11,319.

La'res, a class of tutelary spirits or deities (domestic and public) among the ancient Romans. All the household lares were headed by the *lar familiaris*, who was revered as the founder of the family. In the mansions of the rich the images of the lares had their separate apartment. When the family took their meals some portion was offered to the lares, and on festive occasions they were adorned with wreaths.

Largo, an Italian word in music meaning slowly. *Largo* is one degree quicker than *grave*, and two degrees quicker than *adagio*. *Larghetto* is the diminutive of *largo*.

Largs, a seaside resort in Scotland, county of Ayr, on the Firth of Clyde. In 1263 Alexander III. defeated the Norwegians under Hako in the vicinity. Pop. 3076.

Lar'idæ, the family of natatorial birds popularly known as the sea-gulls, sea-mews, or gulls, and of which the genus *Larus* is the type. See *Gulls*.

Larissa, a town of Northern Greece, on the river Peneus (now Salambria), the capital of Thessaly. It is the seat of an archbishopric, with an estimated population of 20,000. It was the rendezvous place of Julius Cæsar's army before the battle of Pharsalia.

Lark, the common name of birds of the genus *Alauda*, family Alaudidæ. They are characterized by a short, strong bill; nostrils covered with feathers; forked tongue; long, straight hind-claw; and the power to raise the feathers on the back part of the head in the form of a crest. Their distribution throughout the Old World is general, but the only species found in America is the Shore-lark. They are terrestrial in their habits, feed upon worms, larvæ, &c., nest upon the ground, and bring forth a brood twice in the year. The best known is the sky-lark (*A. arvensis*), which is celebrated for the prolonged beauty of its song. The wood-lark (*A. arborea*) is less common than the sky-lark, and is known by its smaller size and less distinct colours. It perches upon trees, and is found chiefly in fields near the borders of woods. It sings during the night, and on this account has been mistaken for the nightingale.

Larkhall, a town of Scotland, in Lanarkshire, 3½ miles south-east of Hamilton. The inhabitants are employed in coal-mines, bleach-works, &c. Pop. 6503.

Lárkhána, a town of India, in Sikárpur district, Sind, Bombay Presidency, is situated on a fertile tract of land on the south side of the Ghár Canal. Pop. 13,188.

Larkspur (*Delphinium*), sometimes called Lark's-heel, a genus of plants of the order Ranunculaceæ, distinguished by its petaloid calyx, the superior sepal of which terminates in a long spur. The Upright Larkspur (*D. ajacis*) and the Branching Larkspur (*D. consolida*) are well-known garden flowers.

Lar'naka, or LAR'NICA (ancient *Citium*), a town on the south coast of the island of Cyprus, on a marshy plain about 1 mile from the shore. It is the chief commercial centre in the island. Since the British occupation in 1878 the place has become of more importance. Pop. about 10,000.

Larne, a seaport of Ireland, county Antrim, 18 miles north by east of Belfast. The bleaching of linen is extensively carried on,

and there are large flour-mills. The harbour, about a mile below the town, is one of the best in the east coast. Larne is much resorted to during summer as a watering-place. Pop. 4716.

La Rochefoucauld (rōsh-fö-kō), FRANÇOIS, DUC DE, PRINCE DE MARSILLAC, a distinguished courtier and man of letters under Louis XIV., was born at Paris in 1613, died 1680. As a distinguished military officer he appeared at the court of Louis XIII., but being suspected by Richelieu of favouring the party of Queen Anne of Austria he was exiled to Blois. Returning when the cardinal died, but not receiving the reward which he anticipated, he took the side of the parliament in the civil war, and was wounded in the faubourg Saint-Antoine of Paris. Abandoning his military career he began to cultivate literature and a social intercourse with Boileau, Racine, Molière, Madame de Sévigné, and Madame de la Fayette. His *Mémoires*, published in 1662, and his *Réflexions ou Sentences et Maximes Morales*, published anonymously in 1665, were the fruits of his literary activity. The latter work, for its brilliancy of style, is still considered a French classic.

La Rochejaquelein (rōsh-zhāk-lan), HENRI DU VERGIER, COMTE DE, celebrated chief of the Vendean royalists, was born in 1772. During the French revolution he put himself at the head of the peasants of La Vendée, and gained sixteen victories in ten months. At the age of twenty-two he was shot by a republican soldier in the battle of Nouaillé, March, 1794. He was one of the most sincere and courageous of the French royalists.

La Rochelle. See *Rochelle*.

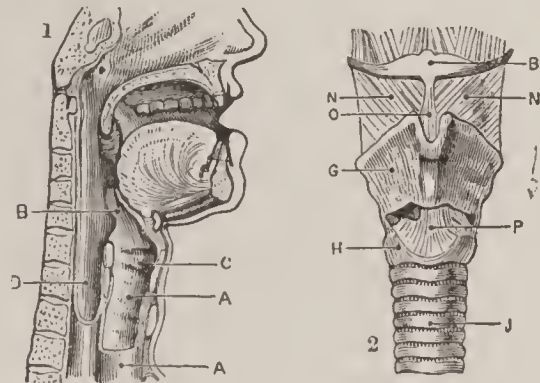
Larva, the term applied in natural history to the first stage in the metamorphosis of insects, and certain other of the lower invertebrates. In insects it is equivalent to the grub or caterpillar stage. Many of the crustacea, as crabs and barnacles, and even vertebrata, as in frogs and newts, pass through larval forms. The larval crab was for long described as a distinct crustacean with the name of *Zoëa*. See *Metamorphosis*.

Laryngi'tis, inflammation of the mucous membrane lining the larynx. It may be acute or chronic. The first usually arises from a cold.

Laryngoscope, a contrivance for examining the larynx and commencement of the trachea. It consists of a plane mirror introduced into the mouth, and placed at such

an angle that the light thrown on it from a concave reflector, in the centre of which is an aperture, is made to illuminate the larynx, the image of which is again reflected through the aperture in the reflector to the eye of the observer.

Larynx, the organ by which the voice is produced, situated at the upper part of the trachea or windpipe. The larynx is formed mainly of two pieces of cartilage, called the *thyroid* and the *cricoid*, one placed above the other. The thyroid is formed of two



Larynx internally (1) and externally (2).

extended wings meeting at the middle line in front in a ridge; above and from the sides two horns project upwards, which are connected by bands to the hyoid bone, from which the larynx is suspended. The thyroid cartilage rests and is movable upon the cricoid, moving backwards or forwards, but not from side to side. The cricoid cartilage is shaped like a signet-ring (Greek *krikos*, a ring), the narrow part of the ring being in front. The cricoid carries, perched on its upper edge behind, the *arytenoid* cartilages, which are of great importance in the production of the voice. These various cartilages form a framework upon which muscles and mucous membranes are disposed. The mucous membrane which lines the larynx is thrown into various folds. These folds are called the *true* vocal cords, and by their movements the voice is produced. They are called *true*, as distinct from the *false* vocal cords which are above them, but take no part in producing the voice. The true vocal cords projecting towards the middle form a chink, which is called the *glottis*. By the contraction of various muscles this chink can be so brought together that the air forced through it throws the edges of the membrane into vibration and so produce sounds. Variations in the form of the chink will affect changes in the sound. Thus the production of voice is the same as in musical

instruments, the arrangements in the larynx being such as to produce (1) the vibratory sounds, (2) to regulate the sound, (3) to vary the pitch, and (4) to determine the quality of the sound. The rapid, delicate, muscular movements involved are produced by nervous stimuli reaching the muscles from the brain. Thus the voice is produced in the larynx, and is modified by the rest of the respiratory passages. (See *Voice*.) In the act of swallowing, the glottis is covered by a cartilaginous plate called the *epiglottis*.— In the accompanying cut, fig. 1 shows c the larynx internally, B being the epiglottis situated above the glottis or entrance to the larynx, A A the trachea, and D the œsophagus or gullet. In fig 2 J is the trachea, B the hyoid bone, N N the thyreo-hyoid membrane, O the thyreo-hyoid ligament, G the thyreoid cartilage, H the cricoid cartilage, P the cricothyreoid ligament.

La Salle, a thriving city of the United States, capital of La Salle county, Illinois, on the north bank of the Illinois river, 80 miles south-west of Chicago. It has zinc smelting works and rolling-mills. There is a good supply of bituminous coal in the neighbourhood. Pop. 1890, 9855.

Lascar, the name applied by Europeans to native East Indian sailors, many of whom are now employed in the mercantile marine.

Las Casas, BARTOLOMÉ DE, a Spanish prelate, known as the Apostle of the Indians, born 1474, died 1556. He accompanied Columbus to Hispaniola in 1498, and on the conquest of Cuba received charge as priest there, and distinguished himself for his humane treatment of the natives. In his zeal for the Indians he returned to Spain several times and obtained decrees in their favour, which, however, were of little avail. In the cause of religion he visited various parts of the New World, including Mexico, Guatemala, Peru, &c. In 1542 he wrote his famous *Brevissima Relacion de la Destruccion de las Indias*. His untiring labours were productive of good to the natives, yet it is a singular fact that he proposed to purchase negroes in order to supply the Cuban planters with African labourers instead of the Indians. He was made bishop of Chiapas in 1544, but resigned this dignity in 1547, his humane efforts being frustrated. He died at Madrid.

Las Cases (lâs câs), EMMANUEL AUGUSTE DIEUDONNÉ MARIN JOSEPH, COMTE DE, French writer, born in 1766, died in 1842. Employed before the revolution as a lieu-

tenant of marines, he afterwards retired to England, where he supported himself by private teaching. Returning to France, he employed himself upon his *Atlas Historique*, published under the name of Le Sage. Coming under the notice of Napoleon, he was by him made baron and minister of state. After Waterloo he shared Napoleon's imprisonment in St. Helena, where the emperor dictated part of his *Memoirs* to Las Cases, and took lessons from him in English. Removed to the Cape of Good Hope from St. Helena for sending out a secret letter, he was permitted to return to France after Napoleon's death, where he published the *Mémorial de St. Hélène* in his *Atlas Historique*.

Laserpitium, a genus of plants, nat. order Umbelliferae, containing about twenty species, natives of Europe, North Africa, and West Asia. They are tall perennial herbaceous plants, with pinnate leaves and compound many-rayed umbels of yellowish or white flowers, the fruit with eight wing-like appendages. Some of them are natives of mountainous districts of Europe, and have tonic and other medicinal properties.

Lasher. See *Fatherlasher*.

Lashkar. See *Gwalior*.

Lassa, or LHASSA, the capital of Tibet, situated on the Kitchu, a tributary of the Brahmaputra. All the public edifices worthy of notice are connected with the Buddhist religion, Lassa being the great centre of Buddhism, and being greatly resorted to from China, Turkestan, Nepaul, &c., as a school of philosophy and Buddhism. About 1½ mile north-west from the city is the Bottala or Buddha-la, the residence of the Dalai or (Grand) Lama, the ecclesiastical sovereign of Tibet, and supreme pontiff of the vast regions forming Central, Eastern, and South-eastern Asia. A triple-peaked hill here rises abruptly out of the plain to the height of 367 feet; it is covered with convents and cells of monks, and in the centre is the palace of the Dalai Lama, a fine edifice, four stories in height, with a vast number of apartments and a large dome. Lassa is the principal emporium of Tibet; silk stuffs, tea, and other articles being here exchanged for Tibetan, Indian, and European goods. Pop. of city and suburbs estimated at 50,000.

Lassalle (lâs'sâl-lè), FERDINAND, a notable German socialist, born at Breslau 1825, of Jewish parents; studied at Berlin University; first made himself known as a leader

during the democratic troubles of 1848, and was imprisoned for a year. In 1861 he published his *System of Acquired Rights*. Thereafter he proceeded to organize the working-classes, which caused the government to accuse him of sedition, and he was imprisoned for four months. In May, 1863, he founded a Labour Union, and began that socialist propaganda which has since become so wide-spread in Germany. In the summer of 1864 he sought rest in Switzerland, and was there killed in a duel occasioned by a love affair. His best-known treatise is the famous *Programme for the Working Classes*.

Lasso, a contrivance used in Spanish America, consisting of a long rope of plaited raw hide, at one end of which is a small metal ring. By means of this ring a noose is readily formed, and the lasso, or lariat, is then used for catching wild cattle, the rope being cast over the animal's head or leg while the hunter is in full gallop.

Lasso, ORLANDO DI (*Orlandus Lassus*), one of the great musicians of the sixteenth century, born at Mons in Hainaut in 1520 or 1530, died 1594. He travelled in England and France, and was appointed chapel-master at Munich. A collection of his works was published at Munich (1604) under the name of *Magnum Opus Musicum*.

Lastre'a, a genus of ferns containing the male-fern, &c.

Lât, a name given to pillars common to all the styles of Indian architecture. With the Buddhists they bore inscriptions on their shafts, with emblems or animals on their capitals. They are among the most original and often the most elegant productions of ancient Indian architecture.

Lataki'a, or LADIKI'A (anciently *Laodicea ad Mare*), a seaport in Syria, 70 miles north of Tripoli, on the Mediterranean. The harbour is well sheltered, though shallow, and there is a considerable trade in silk and cotton, while Latakia tobacco is famous throughout Europe. Pop. about 10,000.

Lateen' Sail is a triangular sail used in xebecs, feluccas, &c., in the Mediterranean, and in the dahabiehs of the Nile. It is extended by a *lateen* yard, which is slung across a mast so as to make an angle of about 45 degrees with it, the lower portion of the yard being about a third of the whole.

Latent Heat, that portion of heat which exists in any body without producing any effect upon another or upon the thermometer; termed also *insensible* as distinct from

sensible heat. It becomes sensible during the conversion of vapours into liquids, and of liquids into solids; and on the other hand a portion of sensible heat disappears or becomes *latent* when a body changes its form from the solid to the liquid, or from the liquid to the gaseous state.

Lat'eran, one of the churches at Rome, built originally by Constantine the Great, and dedicated to St. John of Lateran. It is the episcopal church of the pope, and the principal church of Rome. It has a palace and other buildings annexed to it. Every newly-elected pope takes solemn possession of the church, and from its balcony the pope bestows his blessing on the people. The site on which the buildings of the Lateran stand originally belonged to Plautius *Lateranus*, who was put to death by Nero: hence the name.

Lateran Councils, councils of the Roman Catholic Church, so called because they were held in the Lateran Church in Rome. There were eleven such councils, five of which were ecumenical, the most important being that convened by Alexander III., March 2, 1179, which established the form under which the popes are elected, and that called by Innocent III. in Nov. 1215, which ordered the Crusade, condemned the Waldenses, and declared transubstantiation to be a doctrine of the church.

Latham, ROBERT GORDON, M.D., F.R.S., English scholar, born 1812, died 1888. He was educated at Eton and Cambridge, graduated in 1832, and resided for some time in Denmark and Norway. He adopted the profession of medicine, and became physician to Middlesex Hospital, having been previously appointed to the chair of English language and literature in University College. His name is chiefly associated with researches in philology and ethnology. His best-known works are: *History of the English Language*; *Handbook of the English Language*; *Natural History of Man*; *The Varieties of Man*; *Descriptive Ethnology*; *The Ethnology of Europe*; and a new edition of Todd's *Johnson's Dictionary*.

Lathe, a machine for turning and polishing flat, round, cylindrical, oval, and every intermediate form of body in wood, ivory, metals, &c., the object worked on receiving a rotary motion; it is also used in glass-cutting and earthenware manufacture. It may be turned by the hand, the foot, steam-power, water, &c. A *duplex lathe* is one which works on two turning tools at once;

Blanchard's lathe is one for turning objects of an irregular form, as lasts, gun-stocks, &c. A *throw-lathe* is one in which the mechanic drives the lathe with one hand, holding the cutting tool with the other.—The term is also applied to the batten or lay of a loom in which the reed is fixed, and by the movements of which the weft-threads are laid parallel to each other, shot after shot, in the process of weaving.

Lath'yrus, a large genus of elegant plants, natives of the northern hemisphere and of South America, nat. order Leguminosæ. Many are ornamental, such as the sweet-pea (*L. odorātus*) and the everlasting-pea (*L. latifolius*), and some useful as agricultural plants.

Lat'imer, HUGH, D.D., an English prelate, reformer, and martyr, born about 1490. He entered Cambridge University about 1505, and became M.A. in 1514. He took holy orders, and by and by began to preach Protestant doctrine, which led to vigorous opposition. He was made chaplain to Henry VIII. in 1530, and during the ascendancy of Anne Boleyn in 1535 he was appointed bishop of Worcester. In 1538 he resigned his bishopric, not being able to accept the Six Articles, and was put in prison, but on the accession of Edward VI. he was released and became highly popular at court. This continued until Mary ascended the throne, when Latimer was cited to appear, along with Cranmer and Ridley, before a council at Oxford, and condemned. After much delay and a second trial, Latimer and Ridley were burned at the stake, Oct. 16, 1555. His preaching was popular in his own time for its pith, simplicity, and quaintness.

Latin Church, the R. Catholic Church.

Latin Empire. See *Byzantine Empire*.

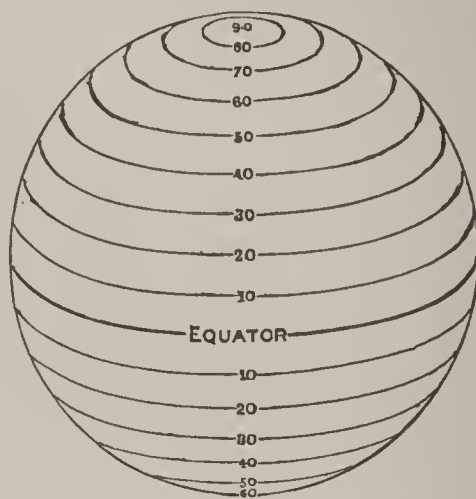
Latin Language and Literature. See *Rome*.

Latins (*Latini*), the ancient inhabitants of Latium, in Italy. In very early times the Latins formed a league of thirty cities, of which the town of Alba Longa, said to have been built by Ascanius, the son of Æneas, became the head. Rome was originally a colony of Alba, and thus the language of the Romans is known as the Latin language.

Lat'inus. See *Æneas*.

Lat'itat (L. 'he lies hid'), a writ (now abolished) by which a person was summoned into the King's Bench to answer, as on the supposition that he lay concealed.

Lat'itude, in geography, the distance of any place on the globe north or south of the equator measured on its meridian. It is called *north* or *south* according as the place is on the north or south of the equator. The highest or greatest latitude is 90°, that is,



Parallels of Latitude.

at the poles; the lowest or smallest 0°, at the equator, between which and the poles any number of parallel circles called *parallels of latitude* may be supposed to be drawn. One method of finding the latitude of a place is by measuring the altitude of the pole-star. When the latitude and longitude of a place are given its position on a map is easily found. See *Longitude*.

Latitudinarians, a term applied to certain broad church English divines of Charles II.'s time. They endeavoured to allay the contests that prevailed between the Episcopalians on the one hand, and the Presbyterians and Independents on the other, and also between the Arminians and Calvinists. At present it generally denotes one who commends or sanctions deviations from the strict principles of orthodoxy.

La'tium, the ancient name applied to a district of Central Italy on the Tyrrhenian Sea, extending between Etruria and Campania, and inhabited by the Latins, Volsci, Æqui, &c.

Lato'na (by the Greeks called *Lētō*), in Greek mythology, the mother of Apollo and Artemis. Latona is represented as a mild, benevolent goddess, in a sea-green dress. She was worshipped chiefly in Lycia, Delos, Athens, and other cities of Greece.

Latour D'Auvergne (là-tör dō-verny), THÉOPHILE MALO DE, French soldier, born in 1743. Entering the military service in 1767, he became aide-de-camp to the Duke of Crillon, and distinguished himself at the

siege of Mahon. When the revolution began he was a captain of grenadiers, refused higher positions, and was named *First Grenadier of France* by Napoleon. He commanded a corps of 8000 men, which was known as the *infernal column*. In 1799 he fought under Masséna in Switzerland, and fell at Neuburg, 27th June, 1800.

La Trappe, a Cisterian abbey of Northern France, situated in a narrow valley of Normandy, 30 miles north-east of Alençon. Founded in 1140, it had become in the 16th century a haunt of licentious monks known as 'the bandits of La Trappe.' In the 17th century, however, the abbot Armand Jean le Bouthelier de Rancé instituted a vigorous reform, and caused the monks to adopt a life of severe asceticism. The austere Trappists prayed eleven times daily, spoke no word to each other except the salutation of *Memento mori*, fed upon fruit and pulse, and every evening dug their own graves. At the revolution the Trappists were obliged to leave France, but at the restoration they returned to their old homes, though expulsions took place again in 1880. La Trappe continues to be the head monastery of the order, and they have also establishments in various parts of Europe, and in America. The professed brothers wear a dark-coloured frock, cloak, and hood, which covers the whole face. A female order of Trappists was founded by Louisa, princess of Condé.

Latreille (là - trā - yè), PIERRE ANDRÉ, French zoologist, born 1762, died 1833. He was professor of entomology in the Paris museum, and a member of the Academy of Sciences. His writings, which are very numerous, include among others natural histories of salamanders, apes, reptiles, &c., the Natural Families of the Animal Kingdom, Genera of Crustacea and Insects, and a Course of Entomology.

Latri'a. See *Dulia*.

Latten, a fine kind of brass or bronze anciently used for crosses and candlesticks, brasses of sepulchral monuments, &c. That employed by English workmen used to be imported from Germany and the Netherlands, the finest kind being known as Cologne plate. Latteners formed one of the recognized crafts of the city of London. In some localities the term is still applied to plate-tin.

Lattice-girder, a girder of which the web consists of diagonal pieces arranged like lattice-work. Lattice-bridge is the name given when the cross-framing is made to resemble lattice-work.

Lattice-leaf, **LATTICE-PLANT**, a very remarkable aquatic plant of Madagascar (*Ouvirandra fenestralis*), by some referred to the nat. order Juncaginaceæ, by others to the Naiadaceæ, and noteworthy for the



Lattice Plant (*Ouvirandra fenestralis*).

structure of its leaves. The blade resembles lattice-work or open needle-work, the longitudinal ribs being crossed by tendrils, and the interstices between them open.

Lauban, a town of Prussia, province of Silesia, on the Queis, 40 miles w.s.w. Liegnitz. It has manufactures of woollen and linen cloth, yarn, &c. Pop. 11,336.

Laud, WILLIAM, Archbishop of Canterbury in the reign of Charles I., was born at Reading in Berkshire, 1573. He was educated at St. John's College, Oxford; took priest's orders in 1601; was made chaplain to Neile, bishop of Rochester, in 1608; became president of his college and king's chaplain, and in 1617 accompanied James I. to Scotland, where he attempted to enforce Episcopacy with no success. After the accession of Charles I. Laud was translated to the see of Bath and Wells, and in 1628 to that of London, while his influence seemed to increase. In 1630 he was elected chancellor of the University of Oxford, which he enriched with a valuable collection of manuscripts, establishing also a professorship of Arabic. In 1633 he was promoted to the see of Canterbury. In 1634 he instituted rigorous proceedings against all who would not conform to the Church of England. By means of spies he hunted out the Puritans, and sought to extinguish all forms of dissent by means of fines, imprisonment, and exile. He prosecuted Prynne, Burton, and Bastwick for libel, and to him is attributed the severe sentences which they received. When the Long Parliament met (1640) the archbishop was impeached for high treason at the bar of the House of Lords by Denzil Holles and committed to the Tower. After three years he was brought to trial, but the

lords deferred giving judgment. The House of Commons, however, passed a bill of attainder (January, 1644), declared him guilty of high treason, and condemned him to death. Accordingly he met his end on the scaffold at Tower Hill with great firmness. An edition of his works was published by Parker (Oxford, 1857-60).

Lau'danum, tincture of opium. See *Opium*.

Lauder, a royal burgh of Scotland, county Berwick, on the Leader, 25 miles south-east of Edinburgh. Pop. 964.

Lauder, SIR THOMAS DICK, BART., Scottish writer, only son of Sir Andrew Lauder, Bart., of Fountainhall, born in 1784, died May 1848. In early life he entered the army, but quitted it in favour of science and literature. He contributed papers to the Edinburgh Royal Society, and in 1817 wrote a tale called *Simon Roy*, which was attributed to the author of *Waverley*. He then tried historical romance in *Lochandhu* and the *Wolf of Badenoch*. In addition to these works are his *Account of the Moray Floods* in 1829; *Highland Rambles* and *Long Tales to Shorten the Way*; editions of *Gilpin's Forest Scenery*, and *Sir Uvedale Price on the Picturesque*; a *Tour Round the Coasts of Scotland*; and the *Queen's Visit to Scotland* in 1842.

Lauderdale, JOHN MAITLAND, DUKE OF, born at Lethington, in Scotland, May 1616, died August 1682. He entered public life as a zealous Presbyterian, was one of a Scottish deputation who waited on Charles I. for the purpose of urging upon him the adoption of moderate views; sat in the Westminster Assembly of Divines as an elder of the Church of Scotland; and not long afterwards was a party to the delivery of the king to the English army at Newcastle. Subsequently, he secretly undertook to raise an army in favour of the king, and tried to induce the Prince of Wales to accept the command, but without success. When at last, in 1650, Charles II. embarked for Scotland, he was accompanied by Lauderdale, who was taken prisoner at the battle of Worcester, and was not set at liberty till the Restoration in 1660. He received great favour from the restored king, and the government of Scotland was almost entirely placed in his hands. This power he used with unscrupulous rigour in his efforts to force Episcopacy upon his former Presbyterian friends. As a reward for his zeal and subserviency he was created Duke of

Lauderdale (1672) and raised to the English peerage as Viscount Petersham and Earl of Guildford (1674), being latterly one of the junta known as the Cabal. As a result of his tyrannical conduct an address was presented to the House of Commons praying that he might be removed from all his offices. This was granted, and the disgraced duke died in a few months afterwards.

Lauenburg, or SAXE-LAUENBURG, formerly a duchy of Denmark, but ceded to Prussia in 1864.

Laughing-gas, nitrous oxide, or nitrogen monoxide, or protoxide of nitrogen: so called because, when inhaled, it usually produces exhilaration. See *Nitrogen*.

Laughing Jackass, or GIANT KINGFISHER (*Dacelo gigas*), a bird allied to the kingfisher, deriving its former title from the singularly strange character of its cry. It is an inhabitant of Australia, being found chiefly in the south-eastern portion of that country. It



Laughing Jackass (*Dacelo gigas*).

makes no nest, but deposits its eggs in the decayed hollow of a gum-tree. In length about 18 inches, it has a dark-brown crest, its back and upper surface is olive-brown, wings brown-black, and the breast and under portions white, crossed by faint bars of pale brown. The tail is longish, with a rounded extremity, tipped with white; its colour is a rich chestnut, with deep black bars.

Laughter, the outward expression of a certain emotion or excited condition of the nervous system, manifested chiefly in certain convulsive and partly involuntary actions of the muscles of respiration, by means of which the air, being expelled from the chest in a series of jerks, produces a succession of short abrupt sounds; certain move-

ments of the muscles of the face, and often of other parts of the body also taking place. Laughter is generally excited by things which are of a ridiculous or ludicrous nature, the ultimate cause being usually attributed to the perception of some incongruity, though mere incongruity is not always sufficient. It may also be caused, especially in the young, by tickling; it also accompanies hysteria, and sometimes extreme grief.

Launce, a name common to two species of fishes, otherwise called sand-eels. They have their name from their lance-like form. See *Sand-eel*.

Launceston (lans'ton), a town of England, county of Cornwall, 19 miles north by west of Plymouth. Till 1885 Launceston returned a member to parliament; it now gives name to a parl. div. of the county. Pop. 1891, 4345.

Launceston, the second town of Tasmania, by rail 120 miles north of Hobart, at the confluence of the North and South Esk rivers with the Tamar, which is navigable up to the town from the sea at Port Dalrymple, a distance of 40 miles. Among the buildings are a government house, town-hall, military barracks, jail, and courthouse. There are also public schools, banks, post-office, and several newspaper establishments. Pop. 1891, 17,108.

Lauraceæ, the laurel family, a natural order of apetalous exogens, consisting entirely of trees and shrubs inhabiting the warmer parts of the world, and in most cases aromatic. Cinnamon, cassia, sassafras, and camphor are products of the order. The best-known species is the *Laurus nobilis*, laurel or sweet-bay.

Lau'reate, POET, a designation first applied to poets who were honoured by the gift of a laurel wreath. It is now the name of an official connected with the royal household of Great Britain, the patent for which appears to have been granted by Charles I. 1630, although Ben Jonson and others are said to have held the title previously. It was the chief duty of the laureate to furnish an ode on the birthday of the king or upon the occasion of a national victory, the emolument attached to the office being £100 a year with a tierce of canary. Since the reign of George III. there have been no special duties connected with the office. From the time of Charles II. the following poets have in succession held the office of laureate:—John Dryden, Nahum Tate, Nicholas Rowe, Lawrence Eusden,

Colley Cibber, William Whitehead, Thomas Warton, Henry James Pye, Robert Southey, William Wordsworth, and Alfred (Lord) Tennyson.

Laurel, a plant belonging to the genus *Laurus*, nat. order Lauraceæ, to which it gives the name. The sweet-bay or laurel (*Laurus nobilis*) is a native of the north of Africa and south of Europe, and is cultivated in gardens not only on account of its elegant appearance, but also for the aromatic fragrance of its evergreen leaves. The fruit, which is of a purple colour, and also the leaves, have long been used in medicine as stimulants and carminatives. The common or cherry laurel is *Cerāsus laurocerāsus*, the Portugal laurel *Cerāsus lusitanica*, the spurge-laurel *Daphne Laureola*, but these are very different from the true laurel. (See the arts.) The name is also given to other plants, as in America to the *Rhododendron maximum*. In ancient times heroes and scholars were crowned with wreaths of bay leaves, whence the terms *laurels* in sense of honours (and similarly *bays*), and *laureate*. From the fruit of the sweet-bay or laurel several oily substances have been extracted. Thus there is the *oil of laurel*, a yellowish oil with an odour of laurel and a strong bitter taste; *laurel fat*, a yellowish-green buttery substance, used for embrocations in rheumatism, paralysis, deafness, &c. The cherry-laurel also yields a volatile poisonous oil when its leaves are distilled in water. Notwithstanding this cherry-laurel leaves are often employed in cookery for their flavouring qualities. But caution requires to be exercised in their use, as death has resulted from an over-supply in custards, puddings, &c., and it is better to use bay leaves instead. From the cherry-laurel *laurel-water* is produced from the leaves by distillation. See *Laurel-water*.

Laurel-water, a fluid obtained by maceration and distillation from the leaves of the cherry-laurel (*Cerāsus laurocerāsus*), being a watery solution of the volatile oil contained in the plant. It contains prussic acid and is therefore poisonous, but is used medicinally. See above article.

Laurentian, in geology, a term applied to a vast series of stratified and crystalline rocks of gneiss, mica-schist, quartzite, serpentine, and limestone, about 40,000 feet in thickness, lying northward of the St. Lawrence in Canada. The Laurentian is the lowest fossiliferous system of rocks, if its

characteristic and only fossil, the *Eozoon canadense*, can be ranked as a fossil. (See *Eozoon*.) The terms *Archæan* and *Pre-Cambrian* are used in Britain for rocks occupying a similar position to the Laurentian. See *Geology*.

Laurentian Mountains, a range in Canada extending for over 3000 miles from Labrador to the Arctic Ocean, forming the watershed between Hudson's Bay, the St. Lawrence, and the great lakes, and dividing the same bay from the sources of the Mackenzie river. The average elevation is about 1500 feet, while some of the peaks attain a height of 4000 feet. The rock formation belongs to the fundamental metamorphosed sedimentary deposits known as the Laurentian system (see above), and the name was given by Sir William Logan.

Lau'rustine, LAURUSTI'NUS, *Viburnum Tinus*, a favourite evergreen shrub belonging to the south of Europe, and grown in Britain. Its flowering season is from December to April.

Laurvig, or LAURVIK, a seaport town of Norway, on a small fjord entering from the Skager Rack, at the mouth of the Lauven, 67 miles s.s.w. of Christiania. It carries on a good trade. Pop. 1891, 11,261.

Lausanne (lō-sānn), a town in Switzerland, capital of the canton of Vaud, on the slopes of Mount Jorat, about $\frac{1}{2}$ mile from the Lake of Geneva and 31 miles north-east of the town of Geneva. Lausanne is built on three hills, two of which are connected by a lofty viaduct, and the most interesting building is the Gothic cathedral, founded about A.D. 1000. Lausanne has little trade or manufactures, but it is much visited by tourists, and its educational institutions attract many foreign pupils. In 1875 it became the seat of the supreme court of the republic. Pop. 1888, 33,340.

Lausitz. See *Lusatia*.

Lava, the general term for all rock-matter that flows, or has flowed, in a molten state from volcanoes, and which when cooled down forms varieties of tufa, trachyte, trachytic greenstone, and basalt, according to the varying proportions of felspar, hornblende, augite, &c., which enter into the composition of the mass, and according to the slowness or rapidity with which it has cooled. The more rapidly this process of cooling goes on the more compact is the rock.—*Lava beds* are of two kinds, namely, *contemporaneous* and *intrusive*. A *contemporaneous lava bed* is one which has been

poured out over the surface of one deposit, and covered by subsequent deposits. Such a bed is in its natural position, and usually alters only the bed beneath it. *Intrusive beds* are those which have been forced up in a molten state through or between strata, altering those on both sides.

Laval, a town of France, capital of the department and on an acclivity washed by the river Mayenne, 154 miles w.s.w. of Paris. It is an interesting and picturesquely situated place; and among its principal edifices are Trinity Church (now the cathedral), the church of the Cordeliers, and an ancient castle, now a prison. The manufactures consist of damasks and other linen goods, flannels, &c. Pop. 1891, 30,374.

La Vallière (vāl-yār), LOUISE FRANÇOISE DE LA BAUME LE BLANC DE, was born in Touraine in 1644, died 1710. The descendant of an ancient family, she was brought to court by her mother, became mistress to Louis XIV., and bore him four children. The king raised the estate of Vaujour into a duchy and a peerage in favour of her and her children. Superseded at court by Madame de Montespan she retired to a Carmelite convent in 1674, where she died. She left a collection of letters, and a work entitled *Réflexions sur la Miséricorde de Dieu*.

Lava Millstone, a hard and coarse basaltic millstone, obtained from quarries near Andernach on the Rhine.

Lavan'dula, a genus of perennial undershrubs and herbs, nat. order Labiatae, natives of dry hilly places in the Mediterranean region, the Canary Islands, Madeira, &c. See *Lavender*.

Lava'ter, JOHANN CASPAR, celebrated as a physiognomist, was born 1741 at Zürich, in Switzerland, and died 1801. He first appealed to the public as a poet in 1767, and then became pastor of a Zürich church in 1774. Lavater is best known, however, as the originator of a system by means of which, when applied to the lines and contours of the face, he claimed to be able to read the character of its owner. He adopted the idea in 1769, and published his great work under the title of *Physiognomical Fragments* (4 vols. 1775-78). This book contained many valuable engravings of distinguished people, with enthusiastic comments by the author. Latterly, Lavater seems to have doubted his own theory in some degree. He published several other works; was imprisoned for the boldness with which

he denounced the excesses of the French revolution; was shot in the street while succouring the wounded when Zürich was captured by Masséna in 1799, and died from the effects of his wound in about a year. His work on Physiognomy was translated into English by Hunter (London, 1789).

Lavaur (lâ-vôr), a town of France, dep. of Tarn, 23 miles south-west of Alby. Its castle was stormed in 1211 by Simon de Montfort and the refugee Albigenes massacred. Pop. 4338.

Lava Ware, a kind of coarse ware resembling lava, made from iron slag, cast into urns, tiles, table-tops, &c.

Laveleye (lâv-lâ), ÉMILE DE, a well-known Belgian economist, born 1822; educated at Bruges and Paris; published his first work in 1847, and became professor of economics at the University of Liège in 1864. He has published many works on the science of economics, of which we may mention—*Étude d'Économie Rurale* (1864), *Éléments d'Économie Politique* (1882), and *Le Socialisme Contemporain*. Died Jan. 3, 1892.

Lav'ender (*Lavandŭla vera*), a delightfully fragrant shrub 3–4 feet high, nat. order Labiatae, a native of the south of Europe. Under favourable conditions it contains one-fourth of its own weight in camphor. It also produces a volatile oil, which is much in demand as an excellent perfume. This oil is got by distilling the flowers. It has a pale-yellow colour, aromatic odour, and a hot taste. Besides being employed as a perfume, it is used in medicine as a stimulant in hysteria, colic, and other affections. *Spirit of Lavender* is prepared by digesting the fresh flowers in rectified spirits and distilling. *Lavender-water* is a solution of oil of lavender in spirit along with otto of roses, bergamot, musk, cloves, rosemary, &c. This preparation after standing for some time is strained and mixed with a certain proportion of distilled water. Enough oil is produced annually in England to make 30,000 gallons of lavender-water.

Laver, a name given to two species of algæ of the genus *Porphyra*—*P. laciniata* and *P. vulgaris*. They are employed as food, salted, eaten with pepper, vinegar, and oil; and are said to be useful in scrofulous affections and glandular tumours.—*Green laver* is the *Ulva latissima*. It also is employed as food, stewed and seasoned with lemon-juice, and is ordered for scrofulous patients.

Lavoisier (lâ-vwä-si-ā), ANTOINE LAU-

RENT, a celebrated French chemist, was born at Paris 1743. The son of wealthy parents, he was educated at the Collège Mazarin, studied mathematics and astronomy under Lacaille, worked in the laboratory of Rouelle, and received lessons on botany from Bernard de Jussieu. His first public distinction was to receive the prize for the best essay on lighting the streets of Paris (1766). About this period he published several treatises, travelled through France collecting material for a geological chart, became an associate of the Academy in 1768, and obtained the post of farmer-general of taxes in 1769. His wealth and position enabled him to extend his researches, and the new discoveries of Priestley, Black, and Cavendish gave impetus and direction to his studies. His salon and laboratory were open to the most distinguished savants, so that the researches of Lavoisier received value from the critical and consultive ability of his friends. He was the first to organize the methods of chemistry and establish its terminology. Accused before the Convention as an ex-farmer-general, he was guillotined in 1794.

Law, GEORGE, financier, was born in Jackson, N. Y., in 1806. Learning the trades of mason and stone-cutter he became a contractor for the construction of railroads and canals; afterwards owning a line of steamships to California and Panama, and engaging in other large enterprises, including Panama R. R. He died in 1881.

Law. See *Commercial Law*, *Canon Law*, *Civil Law*, *Common Law*, *International Law*, &c.

Law, JOHN, of Lauriston, a celebrated financial projector, son of a goldsmith of Edinburgh, born 1671, died 1729. He was bred to no profession, but being skilled in accounts he made various proposals to the Scottish Parliament to remedy the currency, which were rejected. Subsequently he fled from his country in consequence of a duel; visited Genoa and Venice, where he accumulated a fortune by gambling; settled in France, where he received royal patronage, and there started a private bank, and floated his celebrated Mississippi Company. His immediate success was so great that he was made a councillor of state and comptroller-general, but the large amount of paper-money issued depreciated the shares, and led to the collapse of his schemes. Having had to flee from France, he wandered about Europe as a gambler, and died

at Venice in poverty. A volume entitled *Œuvres de J. Law* was published at Paris in 1790, 8vo.

Law, WILLIAM, a divine of the Church of England, born 1686, died 1761. He was in some degree a mystic, and published a translation of the works of Jacob Boehme. His best-known book is the *Serious Call to a Devout and Holy Life*.

Lawburrows, LETTERS OF, in Scots law, a writ or document in the name of the sovereign, commanding a person to give security against offering violence to another. The person applying for the letters must swear to the truth of some cause of alarm, such as actual personal violence or threats of violence.

Lawn Tennis is a modified development of an old English game, and is played with rackets and india-rubber balls. The players number two, four, or more, forming even sides. The ground on which the game is played is usually 78 ft. long by 30 ft. broad. This space is divided by a net 24 ft. wide, 5 ft. high at the ends, and 4 ft. in the centre; the extreme ends of the area are called *the base lines*. The space on either side of the net thus marked off is called a *court*. This court has two lines running through it; one of which is called the *central line*, and runs lengthwise; the other is known as the *service line*, and runs parallel to, and 30 ft. distant from, the central net. The ground thus divided is called the right and left courts. The mode of playing with two is, that one is called the server or 'hand-in,' while the other is 'hand-out.' When the ball is served by 'hand-in' the server must stand with one foot outside the *base line* of the court, beginning on the right side, and his aim is to pitch the ball across the net and into the court diagonally opposed. If the server fails to do this it is called 'a fault,' and he must serve again. When the ball is properly served it is the opponent's duty to return it across the net before it touches the ground a second time. Should the ball not be returned, 'hand-in' scores a point; on the contrary, should the ball not be properly served, 'hand-out' scores. The player who first scores fifteen wins the game, but if both players are equal at fourteen the score is called 'deuce.' It is here that 'vantage' is introduced, and in order to score game the player must win two successive points, otherwise the score returns to 'deuce.'

Law of Nations. See *International Law*.

Lawrence, a town of the United States, in Essex county, Massachusetts, on both sides of the Merrimac river, 26 miles north from Boston. The principal buildings are the courthouse, state university, opera-house, &c. It is principally supported by its extensive cotton and woollen factories, paper-mills, and manufactures of steam-engines, &c. Pop. 1890, 44,654.

Lawrence, Sr., a Roman deacon and martyr. During the Valerian persecution the saint was commanded to reveal the treasures of the church. For answer he collected the poor and the sick and presented them as the treasure which secured heaven. For this he is said to have been burned in the year 258. His day in the Catholic Church is August 10.

Lawrence, St., one of the largest rivers in the world, which rises under the name of the St. Louis, and drains the great chain of N. American lakes. In different parts of its course it is known by different names. From the sea to Lake Ontario it is called *St. Lawrence*; between Lakes Ontario and Erie it is called *Niagara* river; between Lakes Erie and St. Clair, *Detroit* river; between Lakes St. Clair and Huron, *St. Clair's* river; between Lakes Huron and Superior, *St. Mary's* river or the *Narrows*, forming thus an uninterrupted waterway of upwards of 2000 miles. It receives the Ottawa, its principal auxiliary, at Montreal, as also the St. Maurice, the Saguenay, and numerous other large rivers from the north. The river is navigable for Atlantic steamers to the city of Montreal, 600 miles up, and from Montreal upwards by river and lake steamers. The rapids between Montreal and Lake Ontario are passed by means of canals, and Niagara Falls by the Welland Canal. The river's breadth between Montreal and Quebec is from $\frac{1}{2}$ mile to 4 miles; the average breadth, about 2 miles. Below Quebec it gradually widens till it enters the Gulf of St. Lawrence (see next art.). From the beginning of December to the middle of April the navigation is totally suspended by ice. In part of its course it forms the boundary between the United States and Canada.

Lawrence, St., GULF OF, a large inlet of the North Atlantic in British North America, forming the continuation of the estuary of the river St. Lawrence, and separated from the Atlantic chiefly by the island of Newfoundland, Cape Breton, and Nova Scotia. It communicates with the ocean by the open-

ing betwixt Newfoundland and Cape Breton, about 65 miles wide, by the Strait of Belle-Isle and the Gut of Canso. It contains numerous islands.

Lawrence, AMOS, merchant, was born in Groton, Mass., in 1786. In partnership with his brother Abbott a very large business was established, including manufactures. In 1831 Amos retired, and engaged in acts of beneficence, expending \$640,000 for charitable purposes. He died in 1852. —His brother, **ABBOTT**, merchant, was born in Groton, Mass., in 1792. In 1834 Abbott was elected to Congress. In 1848 was candidate for Vice-President. In 1849 minister to Great Britain. Died in 1855.

Lawrence, SIR HENRY MONTGOMERY, born at Mattura, Ceylon, 1806. He proceeded to India in 1821 and served in the Afghan campaign of 1843. At the outbreak of the mutiny he was made commander-in-chief of the province of Oude; having retired to the residency of Lucknow he organized the defence, but was killed by a shell, 2d July, 1857.

Lawrence, JOHN LAIRD MAIR, LORD, Governor-general of India, born in Yorkshire 1811, died in London 1879. Educated at the college of Haileybury, he went



John, Lord Lawrence.

to India in 1829, where his rare administrative ability attracted attention, and caused him to receive the appointment of chief-commissioner of the Punjab in 1853, after he had served in minor posts. The entire wisdom of this appointment was demonstrated during the Indian Mutiny of 1857. By the influence which he had gained over

the Sikhs, Lawrence was able not only to keep the Punjab quiet, but to collect native forces and send them to assist in the early capture of Delhi. He was known as the saviour of India, and his services were rewarded by his being made governor-general in 1863. On his return to England in 1868 he was raised to the peerage under the title of Baron Lawrence of the Punjab and of Grately.

Lawrence, SIR THOMAS, English painter, was born at Bristol 1769, died at London 1830. He was the son of an innkeeper, and at an early age gave striking proof of his talent for art, while still a boy being employed as a painter of portraits in crayons. When his family removed to London in 1787 he became a student of the Royal Academy; was elected an associate by desire of the king; became a Royal Academician in 1798, and was knighted by the Prince Regent in 1815. He painted portraits of many of the most notable persons of his time. He was the favourite portrait-painter at the English court, and was also employed at Vienna.

Lawrence, Douglas co., Kansas, one of the most beautiful and enterprising cities of the West. Pop. 1890, 9997.

Lawso'nia, a genus of plants belonging to the natural order Lythraceæ, containing only one species (*L. alba*), which is widely cultivated, especially in oriental regions. It is the plant from which henna is obtained. It is a tall, slender shrub, with a profusion of small white fragrant flowers; it is sometimes spiny, and in this state has been described under the name of *L. spinosa*; when without spines it has been called *L. inermis*. See *Henna*.

Lawson's Cypress (*Cupressus Lawsoniana*), a species of cypress found in the valleys of Northern California, where it grows to the height of 100 feet. It was introduced into Britain in 1852, and has become a favourite in ornamental grounds. The branches are numerous and are drooping, slender, and regularly disposed, forming a symmetrical columnar mass of rich green spray.

Law Terms. See *Terms*.

Lay'amon, also called **LAWEMAN**, author of the Brut, a metrical chronicle of Britain from the arrival of Brutus to the death of King Cadwalader in A.D. 689, flourished soon after 1200 A.D. From his own account he was a priest, and resided at Ernley, near Radstone, or Redstone, now Lower Arley.

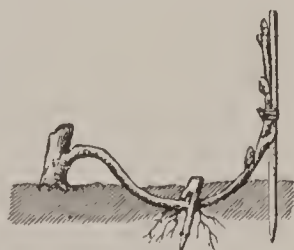
on the Severn, in Worcestershire, where he seems to have been employed in the services of the church. Layamon's Brut is mainly an amplified translation of the French Brut d'Angleterre of Wace, itself merely a translation with additions from Geoffrey of Monmouth's *Historia Britonum*, and that again confessedly a translation from a Welsh or Breton original. Layamon's work appears to have been completed in the first years of the 13th century. Its value is chiefly linguistic.

Lay'ard, SIR AUSTIN HENRY, G.C.B., English traveller, archæologist, and diplomatist, was born in 1817 of a family originally French, and was partly educated in Italy. In 1839 and following years he travelled in the East, and in 1845 began his celebrated excavations on the site of ancient Nineveh, publishing the results of his discoveries in 1849-53. He was appointed attaché to the British embassy at Constantinople in 1849. In 1852 he entered parliament in the Liberal interest; became under-secretary for foreign affairs in 1860, commissioner of works in 1869, and ambassador to the Porte in 1877 under Lord Beaconsfield's government, when he accomplished the annexation of Cyprus. He is best known by his books: *Nineveh and its Remains* (1849), and *Discoveries in the Ruins of Nineveh and Babylon* (1853).

Laybach. See *Laibach*.

Lay Brothers are an inferior class of monks employed as servants in monasteries. Though not in holy orders they are bound by the three monastic vows of poverty, chastity, and obedience. They wear a dress somewhat different from that of the other monks. In nunneries a similar distinction prevails between the nuns proper and the lay sisters.

Layering, in gardening, the propagation of plants by bending the shoot of a living stem into the soil, the shoot striking root while being fed by the parent plant. The figure shows the branch to be layered bent down and kept in the ground by a hooked peg, the young rootlets, and a stick supporting the extremity of the shoot in an upright position.



Layering.

Lay-figure, a jointed human figure used by painters, made of wood or cork, which

can be placed in any attitude, and serves when clothed as a model for draperies, &c.

Laynez (li-neth'), JACOBO, second general of the Jesuits, born in Castile 1512, died 1565. He was educated at the University of Alcalá, and from that he went to Paris, where he made the acquaintance of Ignatius Loyola. Laynez was ordained priest in Venice 1537, and while there he and Loyola formed the project of establishing the Society of Jesus. After the order had been confirmed by Paul III. (1540), and Loyola, at the request of Laynez, had been appointed the first general, he made many journeys for the purpose of extending the society of the Jesuits, and in 1558 he succeeded Loyola as general of the order.

Lazaret'to, a public building, hospital, or pest-house, for the reception of those afflicted with contagious distempers. It is more particularly applied to buildings in which quarantine is performed. See *Quarantine*.

Laz'arists, or FATHERS OF ST. LAZARUS, an order of priests founded at Paris by St. Vincent de Paul in 1625 for the purpose of supporting missions and of ministering to the spiritual wants of the poor. The foundation was confirmed by letters-patent of Louis XIII., May 1627, and the missionaries were erected into a congregation by Pope Urban VIII. in 1631. They have houses in all quarters of the world.

Laz'ulite, blue-spar, a phosphate of aluminium, magnesium, and iron, a mineral of a light or indigo-blue colour, crystallizing in oblique four-sided prisms.

Lazzaro'ni, a class of persons in Naples without employment or home, and having no settled means of support. The name is said to be derived from that of Lazarus in the parable, though it is more directly connected with the hospital of St. Lazarus, which served as a refuge for the destitute of the city. For a long time they played an important part in all Neapolitan revolutions, and under Masaniello accomplished the revolt of July 7, 1647, against the Duke d'Arcos. They are now no longer a separate class, though the name is still applied to the boatmen and fishermen of the city.

Lead, a metal of a bluish-gray colour; when recently cut it has a strong metallic lustre, but soon tarnishes by exposure to the air owing to the formation of a coating of carbonate of lead. Its symbol is Pb, atomic weight 207, specific gravity about 11.38. It is soft, flexible, and inelastic. It is both malleable and ductile, possessing the former qual-

ity to a considerable extent, but in tenacity it is inferior to all ductile metals. It fuses at about 612° , and when slowly cooled forms octohedral crystals. It is an abundant and widely distributed metal. It is a constituent of a very large number of minerals, all of which could be used as sources of it if they could be obtained in sufficient quantity. In practice the metal is got from only a few of these minerals, especially from the sulphide, carbonate, and one or two others. The most important of all the ores of lead is the *sulphide* or *lead glance*, which has been described under the term *Galena*. The *carbonate*, also called *cerusite*, or *lead-spar*, like all the salts of lead, is perfectly unmetallic in its appearance, and is not unfrequently rejected from among common lead ore as an earthy mineral. It occurs in veins in primitive and secondary rocks, accompanying galena and other ores of lead. It is abundant in European countries, in Britain, in Ireland, and it has been found at different localities in the United States. The *sulphate of lead*, *anglesite*, or *lead vitriol*, was found originally at Anglesey. *Chromate of lead*, *crocoisite*, or *crocoite* was originally found in Siberia; it has since been met with in the Philippine Islands, in Brazil, and in Hungary. It was in this mineral that *chromium* was first discovered. *Phosphate of lead* is found accompanying the common ores of lead, though rarely in any considerable quantity. Finely crystallized varieties are found at Leadhills in Scotland, and in Cornwall. In the ores of lead silver is a very common constituent. There are four oxides of lead:—(1) The suboxide (Pb_2O), of a grayish-blue colour. (2) The protoxide or yellow oxide (Pb O), called also *massicot*. *Litharge* is this oxide in the form of small spangles, from having undergone fusion. (3) The red oxide (Pb_3O_4), the well-known pigment called *red-lead* or *minium*. (4) The dioxide or brown oxide (Pb O_2), obtained by putting red-lead in chlorine water or in dilute nitric acid. Of the salts formed by the action of acids on lead or on the protoxide, the carbonate or white-lead and the acetate or sugar of lead are the most important. The protoxide is also employed for glazing earthenware and porcelain. Carbonate of lead is the basis of white oil-paint and a number of other colours. The salts of lead are poisonous, but the carbonate is by far the most virulent poison. Lead is one of the most easily reducible metals, and from the native carbonate can be got by simply

heating with coal or charcoal. The sulphide, however, which is the most abundant of its ores, is not so readily acted on by coal, and a reverberatory furnace, or a special variety of blast-furnace, is employed. Lead obtained in this way is usually too hard for use, and it has to be subjected to a process of purification. This is effected by roasting the lead, sometimes for several weeks, in a reverberatory furnace. By this process the antimony, which is the chief impurity, is burned off, and the dross, which consists of the oxide of that metal with oxide of lead, is afterwards reduced and utilized as a source of antimony. The lead, when judged sufficiently pure, is then cast into ingots or pigs of lead. Prepared in this way the lead retains all the silver present in the original ore, and as that is always of value it used to be extracted whenever the quantity of silver present amounted to above 10 oz. per ton. 1 part of tin and 2 of lead form an alloy fusible at 350° Fahr., which is used by tinmen under the name of *soft solder*. Lead also forms an imperfect alloy with copper. With antimony lead forms the important alloy called *type-metal*. Pewter is a hard alloy of four parts of tin and 1 of lead. In these proportions the lead is not attacked by organic acids such as the acetic. For the poisonous effects of lead see *Lead-poisoning*.

Lead, an instrument used on shipboard for discovering the depth of water. It is composed of a large piece of lead shaped like an elongated clock-weight, from 7 to 11 lbs. in weight, and is attached to a line, generally of 20 fathoms length, called the *lead-line*, which is marked at certain distances to ascertain the depth in fathoms. When the depth is great the *deep-sea lead*, weighing from 25 to 30 lbs., is used. The line, which is much longer than the former, and called the *deep-sea line*, is marked by knots every 10 fathoms, and by a smaller knot every 5.

Lead-plaster. See *Diachylon*.

Lead-poisoning, a disease caused by the presence of lead in some quantity in the system. It may be due to lead which has been taken up by water or other beverage from lead pipes or vessels in which it has been contained. The use of lead in the arts is also a frequent cause of painful, and sometimes of fatal effects, from the metal finding its way into the system. The glazing of culinary vessels with lead; the colouring of confectionery with the chromate, chlo-

ride, or carbonate of lead; the sweetening of sour wine by litharge or oxide of lead, may all produce lead-poisoning more or less serious. But the most frequent and virulent cases occur among painters and persons engaged in white-lead factories; and four forms of disease, either simple or complicated, are apt to manifest themselves—1, Lead or painters' colic, or dry belly-ache; 2, Lead rheumatism or arthralgia; 3, Lead palsy or paralysis, more particularly of the muscles of the fore-arm; and 4, Disease of the brain, manifested by delirium, coma, or convulsions—a form, however, of rare occurrence. Opium and cathartics are the chief medicines administered.

Leadville, a city of the United States, capital of Lake County, Colorado, 171 miles (by rail) w.s.w. of Denver, situated on a plateau over 10,000 feet above sea-level. The city owes its origin and rapid growth to the rich argentiferous lead-mines discovered in 1877. Pop. 1890, 11,212.

Leadwort, a name for the plants typical of the order Plumbaginaceæ.

Leaf, the green deciduous part of a plant, usually shooting from the sides of the stem and branches, but sometimes from the root, by which the sap is supposed to be elaborated or fitted for the nourishment of the plant by being exposed to air and light on its extensive surface. When fully developed the leaf generally consists of two parts, an expanded part, called the *blade* or *limb*, and a stalk supporting that part, called the *petiole* or *leaf-stalk*. Frequently, however, the petiole is wanting, in which case the leaf is said to be *sessile*. Leaves are produced by an expansion of the bark at a node of the stem, and generally consist of vascular tissue in the veins or ribs, with cellular tissue or parenchyma filling up the interstices, and an epidermis over all. Some leaves, however, as those of the mosses, are entirely cellular. See *Botany*.

Leaf-cutting Insects, a name given to certain species of solitary bees, from their lining their nests with fragments of leaves and petals of plants cut out by their mandibles.

Leaf-insects, the name given to orthopterous insects belonging to the family Phasmodæ, and popularly known also by the name of *walking-leaves*. Some of them have wing-covers so closely resembling the leaves of plants that they are easily mistaken for the vegetable productions around them. The eggs too have a curious resemblance to the seeds of plants. They are for

the most part natives of the East Indies, Australia, and South America. The males have long antennæ and wings, and can fly; the females have short antennæ, and are incapable of flight.

League, a measure of length varying in different countries. The English land league is 3 statute miles, and the nautical league 3 equatorial miles, or 3.457875 statute miles. The French metric league is reckoned as equal to 4 kilomètres or 4374 yards.

League, an alliance or confederacy between princes or states for their mutual aid or defence. What in French history is known distinctively as *the League* was headed by Henry, duke of Guise, in 1576, against Henry III. of France. Its ostensible object was the support of the Catholic religion, but the Duke of Guise had further views of his own. As Henry III. was without male heirs, the throne, at his death, would pass to the Protestant Prince Henry of Navarre, to exclude whom, and to obtain the throne for himself, were the real objects of the Duke of Guise. His great popularity seemed to render the accomplishment of his design easy. The example given by Paris in his favour was followed by all the provinces. The league was sanctioned by the pope and the King of Spain. In 1588 the Duke of Guise was murdered at Blois, with his brother Louis, the cardinal, at the king's instigation. The league then declared the throne vacant, and named the third brother, Charles, duke of Mayenne, governor-general of the kingdom. Henry III. now sought aid from his former enemy, Henry of Navarre, but was assassinated by a fanatic leaguer in 1589. The war was then pursued by the league against Henry of Navarre till it was ended, in 1594, by his uniting himself to the Catholic Church, and the next year the league was formally dissolved. For certain other leagues see *Corn-laws*, *Covenant*.

Leake, WILLIAM MARTIN, an English officer and author of works on the topography and antiquities of Greece, born 1777, died 1860. He entered the Turkish service, and was sent on several missions to Syria, Egypt, and Greece. These travels gave a permanent direction to his studies, which were thenceforth devoted to the illustration of Grecian antiquities. His principal works are *Researches in Greece*, &c. (1814); *Topography of Athens* (1821); *Journal of a Tour in Asia Minor* (1824); *Travels in the Morea* (1830); *Travels in Northern Greece* (1835); *Numismatica Hellenica* (1854).

Leamington, a municipal borough and watering-place of England, in Warwickshire, 2 miles east of Warwick, with which it is united in parliamentary representation. Its sheltered position and the beauty of its scenery, together with the excellence of its medicinal springs, have gained it much favour. The springs, which include the three varieties of sulphurous, saline, and chalybeate, attract numerous visitors. Pop. 26,930.

Leander. See *Hero*.

Lea'otong, or SHING-KING, a Chinese prov. in Manchuria (but now reckoned as part of China proper), stretching into the Yellow Sea between the gulfs of Leaotong and Corea. It has an area of 37,000 square miles, a pleasant climate, and is generally fertile. Pop. 6,000,000.

Leap-year, one of the years which contain 366 days, being every fourth year, which leaps over a day more than a common year. Thus in common years, if the first day of March is on Monday the present year, it will the next year fall on Tuesday, but in leap-year it will leap to Wednesday, for leap-year contains a day more than a common year, a day being added to the month of February. Every year is a leap-year which is divisible by 4 without remainder, except the concluding years of centuries, every fourth only of which is a leap-year; thus the years 1800 and 1900 are not leap-years, but 2000 and 2400 are.

Lease, a permission to occupy lands or tenements for life or a certain number of years, or during the pleasure of the parties making the contract. The party letting the lands or tenements is called the *lessor*, the party to whom they are let the *lessee*, and the compensation or consideration for the lease the *rent*. A lease for a period not exceeding three years may be by verbal contract. If, however, the term be longer than three years, the lease must be by deed. A breach of any of the covenants contained in a lease was formerly sufficient to render it void, but now any breach may be compensated by a money payment. The power to lease necessarily depends upon the extent of the lessor's estate in the land or tenement to be leased. A proprietor who has only a life-estate can of course lease his property only during his life. This is the case with a great part of the landed estates of Europe, the very object of entailments and other limitations being to secure the property against alienation, and against incumbrances to the prejudice of the heir or

successor to the inheritance; and yet if the incumbent could not make a lease for a certain time it would be a great abridgment of the value of the estate to himself, as well as to his successor. The laws therefore provide that certain proprietors of estates for life may lease, on certain terms, for any time not exceeding a certain period, as twenty-one or forty years. The English common law makes a distinction as to the dignity of leasehold estates, which in many cases does not correspond to their comparative value and importance, the maxim being that a life-estate, being that of a freeholder, is greater or of more dignity than a lease for ever so many years, as a hundred or a thousand. A freehold is real estate; whereas a lease is but a chattel interest, though the term may be longer than the longest life.

Leather, the skins of animals dressed and prepared for use by tanning, tawing, or other processes, which preserve them from putrefaction and render them pliable and tough. The skins employed are chiefly those of cattle, though the skins of horses, asses, sheep, pigs, and goats are also converted into leather. Hides are received by the leather-maker in various states, those from a distance being usually cured by salting or sundrying, sometimes by both processes. Before subjection to the process of tanning, the cured hides require to be brought back as far as possible to the condition of fresh hides by soaking and softening in water, to which sometimes salt or carbolic acid or sulphide of sodium is added. The softening is now generally assisted by machines, which subject the skins to a kneading process. They are then unhaired by the agency of lime, the customary method of liming being to spread out the hides flat in milk of lime in large pits, the hides being 'hauled' or drawn out once or twice a day, and the liquor stirred up; but there are several variations upon this method of liming. In America and on the European continent the hair is loosened by 'sweating,' which induces a partial putrefaction, attacking the root-sheaths without injuring the hide substance proper. In the old method of warm sweating, the hides were simply laid in a pile and covered, if necessary, with fermenting tan; the preferable cold method consists in hanging the hides in a moist chamber at a uniform temperature of 60° or 70° F. When the hair is sufficiently loosened the hides are usually thrown into the 'stocks,' where the slime and most of the hair is worked out of them. Other unhairing pro-

cesses consist in treatment with alkaline sulphides, especially sulphide of sodium or sulphide of arsenic. To remove the loosened hair, the hide is generally thrown over a beam and scraped with a blunt two-handled knife, but several unhairing machines have been invented. After unhairing, the loose flesh and fat are scraped, brushed, or pared from the inner side, and the hides intended for sole leather are rounded or separated into 'butts' and 'offal'—the latter the thinner parts, including the cheeks, shanks, and belly pieces. The butts are then suspended for from twelve to twenty-four hours in soft fresh-water, and frequently shaken in it to remove lime or dirt prior to undergoing the process of tanning (see *Tanning*) and currying (see *Currying*). The brilliant smooth surface of patent, enamelled, lacquered, varnished, or japanned leather is due to the mode of finishing by stretching the tanned hides on wooden frames and applying successive coats of varnish, each coat being dried and rubbed smooth with pumice-stone. Other special kinds of leather are seal leather, Russia and Morocco leathers (which see). Tawed leathers (see *Tawing*) consist chiefly of the skins of sheep, lambs, kids, and goats treated with alum, or some of the simple aluminous salts, the principal tawing industries being the manufacture of calf-kid for boots and glove-kid. Shamoy, or oil-leather, is prepared by impregnating hides and skins with oil (see *Shamoy*). The chief markets for leather in Britain are at London, Leeds, and Bristol. Important European centres are Antwerp, Havre, Paris, Marseilles, Vienna, and Berlin; while in the United States, New York, Boston, and Philadelphia are the chief centres.

Leather, ARTIFICIAL, the general name of certain fabrics possessing some of the qualities, and often the appearance of leather. One of the earliest methods of fabrication consisted in applying oily pigments to cloth which was subsequently rolled and coated with a sort of enamel paint. An article of this sort, known under the name of leather-cloth, was first produced in America about 1849. Another kind consists of leather parings and shavings reduced to a pulp, and then moulded into buckets, machinery-bands, picture-frames, and other useful and ornamental objects. A so-called vegetable leather consists of caoutchouc dissolved in naphtha, spread upon a backing of linen. It is of considerable strength and

durability, and is used for table-covers, carriage-aprons, soldiers' belts, harness, book-binding, &c. Various other substitutes for leather have been recently introduced, one consisting of cloth with a thin facing of leather; but the commonest material is still obtained by varnishing textiles with coatings of some resinous substance, and then painting or embossing them.

Leather-head, an Australian bird, the *Tropidorhynchus corniculatus*, a species of honey-eater. So called from its head being devoid of feathers and presenting a leathery appearance. Called also *Friar-bird*.

Leather-wood (*Dirca palustris*), nat. order Thymelaceæ, a bush of the United States, with small yellow flowers, flexible jointed branches, and a tough, leathery, fibrous bark, which is used by the Indians for thongs. The twigs are used for baskets, &c. Called also *Moose-wood* and *Wicopy*.

Leaven, dough in which fermentation has commenced, employed to ferment and render light the fresh dough with which it is mingled. Its use dates from remotest antiquity; the addition of yeast or barm being of modern date.

Leavenworth, the largest city and commercial emporium of Kansas, United States, on the west bank of the Missouri, in a rich agricultural region. There are saw-mills, flour-mills, brickworks, breweries, manufactories of carriages, wagons, furniture, shoes, &c., also coal-mines in the vicinity. Pop. 1890, 19,768.

Leb'anon, a town of the U. States, in Lebanon Co., Pennsylvania. It is a seat of iron and other industries. Pop. 14,664.

Leb'anon, MOUNTAINS OF, two nearly parallel mountain ranges in the north of Palestine, stretching from south-west to north-east, and inclosing between them a valley about 70 miles long by 15 miles wide, known anciently as Cœlê-Syria. The range on the west is called Lebanon, and that on the east Anti-Lebanon; the Arabs, however, call the former Jebel-Libnan, and the latter Jebel-esh-Shurky. Lebanon, which runs almost parallel to the Mediterranean coast, is the far loftier range of the two, and presents almost a continuous ridge, its loftiest summit—Jebel Sunnin, near Beyrout—being about 10,000 feet above the sea. Though under the snow limit, snow and ice remain throughout the year in the higher ravines. Anti-Lebanon claims the culminating point of the whole chain, Jebel-esh-Sheikh (about 11,000 feet). In the south part of the chain

the Upper Jordan has its source. The habitable districts are occupied towards the north by the Maronite Christians, and towards the south by the Druses. The forests of cedar for which Lebanon was famed have to a large extent disappeared.

Leb'edin, a town of Russia, in the government of Kharkov, and 75 miles west-north-west of the city of that name. Pop. 16,958.

Lebrija (le-brē'há), a town of Spain, Andalusia, province of Seville, and 28 miles south by west of the city of that name, near the left bank of the Guadalquivir. Pop. 12,860.

Lebrun (lè-brün), CHARLES, a French painter of historical and mythological subjects, born at Paris in 1619. He studied with Vouet, and then in Rome under Poussin. In 1648 was made president of the new Royal Academy of Painting and Sculpture. From 1661 he was principally employed in embellishing the residences of Louis XIV. and his nobles with works of art, and in superintending the brilliant spectacles of the court. He embellished Versailles in particular, and was also director of the Royal Gobelins Manufactory. He died in 1690.

Lecano'ra, a genus of lichens, a species of which yields cudbear.

Lecce (let'chā), a town in Southern Italy, capital of the province of its own name, 50 miles E.S.E. of Taranto. Pop. 21,742.

Lecco, a town of Northern Italy, on an arm of Lake Como, called from it Lago di Lecco. Pop. 6075.

Lecky, WILLIAM HARTPOLE, English historical writer, born in Dublin 1838. He has written *The Leaders of Public Opinion in Ireland*; *History of the Rise and Influence of the Spirit of Rationalism in Europe*; *History of European Morals from Augustus to Charlemagne*; *History of England in the Eighteenth Century* (8 vols., 1878-89).

Lectern, the reading desk or stand on which the larger books used in the service of churches are placed. The most ancient lecterns were made of wood, and elaborately carved. Modern ones have been made of marble or brass, very ornamental in design and of excellent execution. They are sometimes made in the form of an eagle, the outspread wings supporting the volume.

Lectionary, one of the service-books of the church in the middle ages, so termed as it contained the lessons (*lectiones*) of the church service.

Lector (*reader*), in the early church, a servant of the church whose business it was

to read parts of the Bible, and other writings of a religious character, to the people.

Leda, in Greek mythology, the wife of the Spartan king Tyndarus. By Zeus, who took the form of a swan, she was the mother of Castor and Pollux.

Ledbury, a town of England, in Herefordshire, at the southern extremity of the Malvern Hills, 14½ miles from Hereford. It has a handsome ancient church in the Norman style, with a detached tower and spire. Pop. 4276.

Ledum. See *Labrador Tea*.

Lee, in nautical language, refers to the side towards which the wind is blowing, *leeward* and *windward* being opposite terms. A *lee shore* is one to leeward of a vessel.—A vessel's *leeway* is the amount that she drifts from her proper course.

Lee, HENRY, an American revolutionary general, born in Westmoreland county, Virginia, 1756; educated at Princeton College, and in 1776 appointed captain of a company of cavalry in Colonel Bland's Virginia regiment. In the memorable retreat of Greene before Lord Cornwallis, Lee's legion acquired fame as the rear-guard of the American army, the post of the greatest danger. At the battles of Guildford Court-house and Eutaw, and in other affairs, Lee specially distinguished himself. On the conclusion of the war he was sent to Congress as a delegate from Virginia, and in 1792 was chosen governor of that state. In 1801 he retired from public life. He died in 1818.

Lee, NATHANIEL, an English dramatic poet, born about 1657, and educated at Cambridge, whither he went in 1668. He afterwards went to London, and in 1675 produced his tragedy of *Nero*, from that time to 1681 producing a tragedy yearly, the best known being the *Rival Queens* (1677). He also tried his abilities as an actor, but failed in the attempt. In 1684 he became insane and was confined in Bedlam until 1688, when he was discharged and wrote two more tragedies, the *Princess of Cleves* and the *Massacre of Paris*, which appeared in 1689 and 1690. He died in 1691 or 1692.

Lee, RICHARD HENRY, a distinguished American of the Independence era, born 1732 at Stratford, Westmoreland county, Virginia. He received part of his education in England, and after his return to his native country was chosen a delegate to the House of Burgesses from Westmoreland county. In the opposition to unjust British

claims he played throughout a most important part, and on being sent as delegate from Virginia to the first American Congress at Philadelphia (1774) was at once recognized as a leader in that assembly. He drew up most of those addresses to the king and the English people which were admitted by his political opponents to be unsurpassed by any of the state papers of the time. When war became inevitable Lee was placed on the various committees appointed to organize resistance. On the 7th of June, 1776, he introduced the motion finally breaking political connection with Britain. In consequence of weak health he was unable to serve in the field, but his activity as a politician was as unceasing as valuable. In 1784 he was unanimously elected president of the Congress, and when the federal constitution was established he entered the Senate for his native state. In 1792 he retired into private life, and died in Virginia in 1794.

Lee, ROBERT EDWARD, American general, commander-in-chief of the Confederate army, and one of the most skilful tacticians who took part in the great civil war, was born in Virginia in 1807. In 1829 he left the military academy of West Point with the rank of second lieutenant of engineers. After making a tour in Europe he obtained a captaincy in 1838, and in 1847 was appointed engineer-in-chief of the army for the Mexican campaign, in which his brilliant services at Cerro-Gordo, Contreras, Cherubusco, and Chapultepec (where he was wounded) speedily gained for him the rank of colonel. From 1852 to 1855 he was superintendent of military studies at West Point. In 1861 he became colonel of his regiment, but on the secession of Virginia from the Union he threw up his commission, was intrusted with the command of the Virginian army, and subsequently was selected by President Davis as commander-in-chief. In June 1862 he defeated the Federal army under M'Clellan, and, aided by Stonewall Jackson, defeated Pope in a series of engagements commencing 20th August, and ending with the victory of Manassas Junction on the 30th. Lee now crossed the Potomac into Maryland to threaten Washington itself, but a series of checks obliged him to withdraw behind the Rappahannock. On the 13th December he routed the Federalists under Burnside at Fredericksburg, and on the 2d and 3d May, 1863, gained the splendid victory

of Chancellorsville over Hooker. After this Lee resolved on an invasion of Pennsylvania, but was beaten by Meade at Gettysburg, July 1st and 3d, and forced to retreat into Virginia. The campaign of 1863 ended in August. The campaign of



General Lee.

1864 was begun by the advance of Gen. Grant on May 4. A succession of stubbornly contested battles followed from the Wilderness by way of Spottsylvania and Cold Harbor to Petersburg. On April 2, 1865, Grant broke through Lee's defences. Lee made an attempt to unite with Johnston, but was prevented. The Union forces with their great superiority of men gradually hemmed in the Confederate forces, and on April 9 Lee and his army surrendered to Grant at Appomattox C. H. General Lee retired into private life; was elected president of Washington College, Lexington, Va., in 1865. He died October 12, 1870.

Leech, a name for those Annelida or Worms, that form the type of the order Hirudinea (synonyms, *Suctorina*, *Discophora*) of that class. The distinctive feature of the leeches consists in the presence of one or two sucking-discs. The rings or segments of the body are very numerous and closely set. Usually leeches breathe either by the general surface of the body or by little sac-like pouches known as the respiratory *sacculi*. They chiefly inhabit fresh-water ponds, though some live among moist grass, and some are marine. The familiar horse-leeches (*Hæmopsis sanguisuga*) of fresh-water ponds and ditches are included in this group. The land-leeches of Ceylon are terrestrial in habits, living amongst

damp foliage and in like situations. They fasten on man and beast, and are a serious pest to travellers. The species generally employed for medical purposes belong to the genus *Sanguisuga*, and are usually either *S. officinālis* (the Hungarian or green leech), used in the south of Europe, or *S. medicinālis* (the brown-speckled or English leech), used in the north of Europe. The latter variety, however, is now rare in England, owing to the drainage of bogs and ponds. The mouth, situated in the middle of the anterior sucker, is provided with three small white teeth, serrated along the edges, and capable of inflicting a peculiar Y-shaped wound, which, like that produced by the soldier's bayonet, is difficult to close, and permits a large and continuous flow of blood. From 4 drachms to 1 oz. may be stated to be the average quantity of blood that can be drawn by a leech. After detaching themselves, leeches are made to disgorge the blood they have drawn by being placed in a weak solution of salt, or by having a little salt sprinkled over them. Leeches appear to hybernate in winter, burying themselves in the mud at the bottom of the pools, and coming forth in the spring.

Leech, the border or edge of a sail which is sloping or perpendicular.

Leech, JOHN, an English artist and humorist, born in London in 1817; educated at the Charterhouse School. He studied at St. Bartholomew's Hospital for a time, but forsook medicine, and commenced drawing on wood for publications. His first important work was illustrations to the *Ingoldsby Legends*. In 1841 he joined the staff of *Punch*, his first drawing appearing in August of that year. For that periodical he worked with pre-eminent success, supplying weekly political satires and pictures of all phases of English life, showing no less artistic power than versatile humour. He died suddenly in 1864. His designs for *Punch* have nearly all been republished as *Pictures of Life and Character*, and as *Pencillings from Punch*. He also executed the illustrations for Mr. Sponge's *Sporting Tour*, *The Comic History of England*, and other books. No artist has excelled John Leech in his particular line.

Leechee. See *Litchi*.

Leeds, a municipal, parliamentary, and county borough and manufacturing town of England, in the West Riding of Yorkshire, on the river Aire, which here becomes navigable, and is crossed by eight bridges; 185½ miles by railway N.N.W. from London. The

Leeds and Liverpool Canal communicates with the Aire, which again gives water communication with Hull, &c. The town extends for about 7½ miles from east to west, and about 7 from north to south. The houses are almost entirely built of brick. Among the most conspicuous of the public buildings are the town-hall, a massive stone building of the Corinthian order, considered one of the finest municipal buildings in the kingdom; the infirmary, a building in the Gothic style; the municipal offices and free library, the royal exchange, the mechanics' institute and school of science and art, the Grand Theatre, &c. The chief educational institution is the Yorkshire College for science, technology, and medicine, affiliated to the Victoria University, Manchester. The charities and charitable institutions are numerous. Leeds possesses a public park of 300 acres, while throughout the town various pieces of land have been laid out by the corporation as recreation grounds. The water-works and the gas-works are the property of the corporation. Leeds has been for generations the chief seat of the woollen manufacture of Yorkshire. In the wholesale clothing trade several thousand hands are employed, as also in steel-works, iron-foundries, rolling-mills, tool and machine factories. The boot and shoe factories, the leather trade, and the cloth-cap trade also employ large numbers of men and women, and there are extensive colour-printing works, tobacco manufactories, chemical and glass works, works for making drainage pipes, fire-bricks, terra cotta, pottery, &c. Nearly a hundred collieries are worked in the district. The history of Leeds extends over more than 1200 years, the town being mentioned under the name of *Loid* or *Loidis* by the Venerable Bede as the capital of a small British kingdom about 616. Leeds was not made a parliamentary borough till 1832, when it was allotted two members; in 1867 it got a third, and in 1885 two more. In the neighbourhood is the fine ruin of Kirkstall Abbey. Pop. 1891, 367,506.

Leek (*Allium Porrum*), a mild kind of onion much cultivated for culinary purposes. The stem is rather tall, and the flowers are disposed in large compact balls, supported on purple peduncles. See also *Allium*.

Leek, a market town of Staffordshire, England, picturesquely situated in the valley of the Churnet, 28 miles from Manchester. The staple industry is the manufacture of

sewing silks and silk trimmings, silk dyeing, &c. Pop. 1891, 14,128.

Leeuwarden (lā'ū-var-den), a town of Holland, capital of the province of Friesland, on the Ee, 70 miles north-east of Amsterdam, intersected by numerous canals. The principal edifices are the palace of the former stadtholders of Friesland, several churches, town-house, and provincial court-house. The industrial establishments are various. Pop. 1892, 30,689.

Leeuwenhoeck (lā'ū-ven-hök), ANTONY VAN, Dutch microscopist, born 1632, died 1723. He completed Harvey's discovery of the circulation of the blood by showing that it passes from the arteries to the veins through the capillaries. He also discovered the red corpuscles of the blood, the spermatozoa, the infusorial animalcules, &c. He contributed papers to the Philosophical Transactions of the Royal Society, London.

Leeward, in nautical phraseology, a term that refers to the quarter towards which the wind blows. See *Lee*.

Leeward Islands. See *West Indies*.

Lefkosia. See *Nicosia*.

Leg, any limb of an animal that is used in supporting the body, and in walking and running; in a narrower sense that part of the human limb from the knee to the foot. The

In front of the knee-joint, situated within a tendon, is the knee-cap or *patella*. (See *Knee*.) The lower end of the tibia and of the fibula enter into the ankle-joint, the weight being conducted to the foot by the tibia. (See *Foot*.) In the foreleg are muscles which extend the foot, and on the back of the leg are two large muscles which form the bulk of the calf of the leg, and which unite in a thick tendon, the *tendo Achillis*. These muscles are used in walking, jumping, &c.

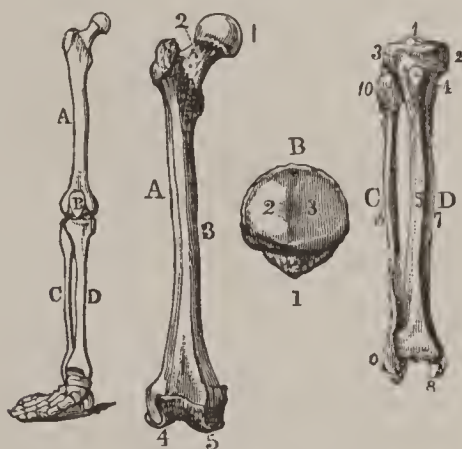
Legacy, a gift by will of personal property, as goods and chattels; a testamentary gift of real property being called a *devise*. The mode of compelling executors to pay a legacy is by suit in equity for the administration of the testator's assets; courts of common law have not, in general, any jurisdiction. Executors cannot be compelled to pay a legacy until the expiration of a year after the testator's death. After a legacy is paid the legatee must refund if it should be necessary for the payment of creditors who come in, although after the period above mentioned. The party to whom a legacy is bequeathed is termed the *legatee*.

Le'gates, persons sent by the pope as ambassadors to foreign courts. Legates *a latere*, the highest in rank, were sent on particularly important missions, and were taken from the college of cardinals only.

Legation, the body of official persons attached to an embassy. Formerly in Italy legation signified a division of the States of the Church.

Lega'to (Italian), in music, a word used in opposition to *staccato*, and implying that the notes of the movement, or passage to which it is affixed, are to be performed in a close, smooth, and gliding manner, each note being held till the next is struck.

Legend, originally the title of a book containing the lessons that were to be read daily in the service of the early church. The term legend was afterwards applied to collections of biographies of saints and martyrs, or of remarkable stories relating to them, because they were read at matins and in the refectories of cloisters, and were earnestly recommended to the perusal of the laity. The Roman breviaries contain histories of the lives of saints and martyrs, which were read on the days of the saints whom they commemorated. They originated in the 12th or 13th century, and they contributed much to the extinction of the old German (heathen) heroic traditions. Among



Bones of the Human Leg.

A, Femur: 1, Head; 2, Neck; 3, Shaft; 4, External condyle; 5, Internal do. B, Patella: 1, Apex of the bone. 2, Surface of articulation with external condyle of the femur; 3, Do. with internal condyle. C, Fibula: 6, Shaft; 9, Lower extremity, the external malleolus; 10, Upper extremity. D, Tibia: 1, Spinous process; 2, Inner tuberosity; 3, Outer do; 4, Tubercle; 5, Shaft; 7, Internal surface of shaft; the sharp border between 5 and 7 the crest of tibia; 8, Internal malleolus.

human leg has two bones, the inner called the *tibia* or shin-bone, the outer called the *fibula* or clasp-bone. The tibia is much the larger of the two, and above is connected with the thigh-bone to form the knee-joint, the fibula being attached to the outer side of its head.

the best-known collections were the *Legenda Sanctorum* or *Historia Lombardica* and the *Golden Legend* (q. v.). The term is used in a general sense for any remarkable story handed down from early times, and is also applied to the motto or words engraved in a circular manner round the head or other figure upon a medal or coin.

Legendre (lè-zhän-dr), ADRIEN MARIE, mathematician, born at Paris in 1752, early a professor of mathematics in the military school there, and in 1783 a member of the Academy. In 1787 he was employed along with Cassini and Mechain, to measure a degree of latitude between Dunkirk and Boulogne, while English mathematicians did the same on the other side of the Channel. He died in 1833. He particularly distinguished himself by profound investigations as to the attraction of elliptical spheroids, and his method of calculating the course of the comets. His best-known work is his excellent *Éléments de Géométrie* (1794), translated into English by Thomas Carlyle, and edited by Sir David Brewster.

Legerdemain (lej-ër-de-män'), or CONJURING, a popular amusement or exhibition, consisting of tricks performed with such art and adroitness that the manner or art eludes observation. All the phenomena of legerdemain are referrible to sleight of hand, mechanical contrivances, confederacy, or some combination of these. In the more elaborate phases of the art the aid of optical, chemical, and other sciences is utilized.

Leghorn (Italian, *Livorno*), a seaport of Northern Italy, in the province of Leghorn or Livorno, on the Mediterranean, 12 miles s.s.w. of Pisa and 50 miles w.s.w. of Florence. Leghorn is for the most part modern, and well and regularly built. It is intersected by canals, and a navigable canal connects it with the river Arno. Among objects of interest are the Duomo or Cathedral; the church of the Madonna; a synagogue richly ornamented with marbles; the English chapel and cemetery (containing Smollett's tomb); the lazarettos, particularly San Leopoldo, one of the most magnificent works of the kind in Europe; &c. The manufactures are varied. Ship-building is carried on, and within recent years several iron-clads have been constructed in the dockyards. Trade is principally carried on with the ports of the Levant and the Black Sea, and with the United Kingdom. Leghorn was a mere fishing village when it came into the possession of the Florentines in

1421, and it continued to be a place of no importance till the 16th century. It now ranks among the chief ports after Genoa and Naples. Pop. 96,937.

Leghorn, a kind of plait for bonnets and hats made from the straw of bearded wheat cut green and bleached: so named from being imported from Leghorn.

Legio Fulminatrix. See *Thundering Legion*.

Legion, in ancient Roman armies a body of infantry consisting of different numbers of men at different periods, from 3000 to above 6000, often with a complement of cavalry. Each legion was divided into ten cohorts, each cohort into three maniples, and each manipule into two centuries. Every legion had sixty centurions, and the same number of *optiones* or lieutenants and standard-bearers. The standard of the legion was an eagle.

Legion of Honour (*Légion d'Honneur*), a French order for the recognition of military and civil merit, instituted by Napoleon while consul, May 19, 1802, and inaugurated 14th July, 1804. The decoration originally consisted of a star containing the portrait of Napoleon surrounded by a wreath of oak and laurel, with the legend, 'Napoléon empereur des Français;' on the reverse was the French eagle with a thunderbolt in his talons, and the legend, 'Honneur et patrie.' The order has been remodelled several times, the last occasion being subsequent to the downfall of the second empire. There are now five ranks or classes: ordinary chevaliers or knights, officers, commanders, grand-officers, grand-crosses. The profuse granting of the decoration of the order latterly brought the institution into discredit, and the number of chevaliers is now restricted to 25,000, the officers to 4000, the commanders to 1000, the grand-officers to 200, and the grand-crosses to 70. The star now bears a figure emblematic of the republic, with the inscription 'République Française, 1870,' on the reverse two flags, with the inscription 'Honneur et Patrie.'

Legitim (lej'-), in Scots law, the share of a father's movable property to which on his death his children are entitled. This amounts to one-third where the father has left a widow, and one-half where there is no widow. The legitim cannot be diminished or affected by any testamentary or other deed. By a statute passed in 1881 legitim is also made payable on the mother's movable estate.

Legros (lè-grō), ALPHONSE, a French artist whose work has been for the most part done in England; born near Dijon in 1837, and largely self-instructed. He went to Paris in 1851, and in 1857 exhibited for the first time in the Salon. Finding small encouragement, however, in France, he in 1863 took up residence in London, and was ultimately appointed in 1876 professor at the Slade School in University College. His work, alike in painting, etching, and modelling, is strongly mannered, and as a colourist his range is somewhat limited. His more important pictures are the Anglers, the Pilgrimage, the Spanish Cloister, the Benediction of the Sea, the Baptism, and the Coppersmith. His etchings will prove in all probability his most enduring work, among the most noteworthy being his Death and the Woodman and Le Repas des Pauvres, both marked by a fine breadth in conception and handling. His portraits are also of considerable interest and value. One of the most striking qualities of his work is the ease and speed with which he perceives and reproduces the essentials of a subject up to a certain point, never, however, carrying the work to a high degree of finish.

Legu'min, a substance which makes up the greater part of the substance of leguminous seeds, such as peas and beans, very similar to casein.

Legumino'sæ, one of the largest and most important natural orders of plants, including about seven thousand species, which are dispersed throughout the world. They are trees, shrubs, or herbs, differing widely in habit, with stipulate, alternate (rarely opposite), pinnate, digitately compound or simple leaves, and axillary or terminal one or many flowered peduncles of often showy flowers, which are succeeded by a leguminous fruit. Four sub-orders are recognized: Papilionacæ, Swartzieæ, Cæsalpinieæ, and Mimoseæ. It contains a great variety of useful and beautiful species, as peas, beans, lentils, clover, lucern, sainfoin, vetches, indigo, logwood, and many other dyeing plants, acacias, senna, tamarinds, &c.

Leh, or **LE**, the chief town of Ladakh province, in Cashmere, in a fine open valley about 11,000 feet above sea-level, and 2 miles from the right bank of the Indus, 210 miles north of Simla. The rajah's palace and several temples here are of very rich architecture. Leh is the great entrepôt for the traffic between the Punjab and Chinese

Tartary, a principal article of trade being shawl wool from the latter. Population variously estimated from 4000 to 12,000.

Lehigh River, a river of the U. States, in Pennsylvania, rising in Pike county and



Leguminosæ.

1, Papilionacæ: a, Flower of the pea; s, Standard; w, Wings; k, Keel; b, Stamens, nine connected, one free; c, Legume, seeds fixed to the upper suture in one row. 2, Swartzieæ: a, Flower of *Swartzia grandiflora*, with its single petal and hypogynous stamens; b, Calyx; c, Legume. 3, Cæsalpinieæ: a, Flower of *Poinciana pulcherrima*, showing its difform interior upper petal; b, Calyx; c, Legume. 4, Mimoseæ: a, One flower of common sensitive plant (*Mimosa pudica*), showing its regular corolla; b, Stamens, hypogynous; c, Legume exterior; d, Legume interior; e, Legume of *Acacia arabica*. A, Curved radicle, as in Papilionacæ. B, Straight radicle, as in Swartzieæ and Cæsalpinieæ.

joining the Delaware at Easton after a course of 100 miles, of which 70 are navigable.

Lehigh University, an institution of the U. States, at South Bethlehem, Pa., founded and liberally endowed by Asa Packer for the instruction (without charge) of young men from any part of the country or of the world. It has fine buildings, a library of over 60,000 vols., &c. It gives instruction in the various branches of general literature and technology.

Leibnitz (lib'nits), GOTTFRIED WILHELM, BARON VON, German scholar and philosopher, born in 1646 at Leipzig. He studied law, mathematics, and philosophy at the university of his native town, where he published a philosophical dissertation, *De Prin-*

cipio Individui, as early as 1663. This was followed by several legal treatises, for example, *De Conditionibus* (1665), and by a remarkable philosophico-mathematical treatise, *De Arte Combinatoria* (1666). After holding political appointments under the Elector of Mainz he went to Paris in 1672, and there applied himself particularly to mathematics. He also went to England, where he was elected a member of the Royal Society, and made the acquaintance of Boyle and Newton. About this time he made his discovery of the differential calculus. The Duke of Brunswick-Lüneburg then gave him the office of councillor and a pension, and after a further stay in Paris he returned to Hanover in 1676, and entered upon the superintendence of the library. For the rest of his life he served the Brunswick family, chiefly residing at Hanover, though visiting also Berlin, Vienna, &c. Being commissioned to write the history of the house of Brunswick-Lüneburg Leibnitz went (1687) to Vienna, and thence to Italy. The three years spent in these tours of investigation supplied him with an immense mass of political materials, portion of which appeared in several works. About this time he proposed a scheme to reunite Protestants and Catholics. Having assisted the Elector of Brandenburg (afterwards Frederick I. of Prussia) to establish the Royal Academy of Sciences at Berlin, he was made president for life (1700). He was also made a privy-councillor by the Czar Peter the Great. In 1710 he published his celebrated *Essai de Théodicée*, on the goodness of God, human liberty, and the origin of evil, in which he maintained the doctrines of pre-established harmony and optimism, and which was followed by his *Nouveaux Essais sur l'Entendement Humain*. A sketch of his philosophy was given by him in his *Monadologie*, 1714. His controversy with Newton concerning the discovery of the differential calculus, and the pains of the gout, embittered the close of his active life. He died in 1716. The principal metaphysical speculations of Leibnitz are contained in his *Théodicée*, *Nouveaux Essais*, *Système nouveau de la Nature*, *De Ipsa Natura*, *Monadologie*, and in portions of his correspondence. He controverted Locke's rejection of innate ideas, holding that there are necessary truths which cannot be learned from experience, but are innate in the soul, not, indeed, actually forming objects of knowledge, but capable of being called forth by circumstances. Au-

thorities seem generally agreed that Leibnitz discovered the differential calculus independently of any knowledge of Newton's method of fluxions, so that each of these great men in reality attained the same result for himself.

Leicester (les'tér), a municipal and parliamentary borough of England, county town and near the centre of Leicestershire, on the right bank of the Soar. The more important public buildings are the Church of All Saints; St. Margaret's, a large and beautiful structure of the 15th century on the site of the old Saxon cathedral, and adjoining the abbey at which Cardinal Wolsey died in 1530; St. Martin's; St. Mary's, dating from 12th century; St. Nicholas', a very ancient Gothic church; the municipal buildings, with lofty clock-tower, and fine public square with fountain; the guild-hall, the public library, &c. The staple manufactures are cotton and worsted hosiery, elastic webs, ironware, boots and shoes, shawls, lace, thread, &c. Leicester is a place of considerable antiquity, and was known to the Romans under the name of *Ratae*. Its walls and strong castle were demolished in the reign of Henry II. It suffered severely during the wars of Lancaster and York, and also during the Parliamentary war, having in the latter been first taken by storm by the royalists, and then retaken by the republicans. It sends two members to parliament. Pop. 142,051.—**LEICESTERSHIRE** is bounded by Nottingham, Derby, Warwick, Northampton, Rutland, and Lincoln; area, 511,907 acres, almost all arable land, meadow, and pasture. The surface is varied and uneven, but possesses no bold features. The county is nearly equally divided geologically by the lias and sandstone formations; the former on the east, the latter on the west side. The coal formation exists to the extent of about 15 square miles on the west, and the clay-slate in Charnwood Forest. The principal rivers, all tributaries of the Trent, are the Soar, Wreak, Anker, Devon, and Mease. Dairy farms are numerous, and the cheese known as *Stilton* is chiefly made in Leicestershire. The Leicestershire sheep are much valued for their wool. The county returns four members to parliament. Principal towns besides Leicester—Loughborough, Market-Harborough, Melton-Mowbray, and Hinckley. Pop. 1891, 373,693.

Leicester, ROBERT DUDLEY, EARL OF, fifth son of John Dudley, Duke of Northum-

berland, born 1532, died 1588. In 1549 he was married to Amy Robsart, daughter of a Devonshire gentleman, and is said to have been accessory to her murder in 1560. Elizabeth created him Earl of Leicester and privy-councillor, and bestowed titles and estates on him lavishly. Her fondness for him caused his marriage with her to be regarded as certain. His marriage with the Countess of Essex in 1578 mortally offended her. He successfully commanded in the Low Countries, and when England was threatened by the Spanish Armada, in 1588, was appointed lieutenant-general.

Leidy, JOSEPH, naturalist, was born in Philadelphia in 1823. In 1845 became professor to the chair of anatomy in University of Pennsylvania, in 1853 professor, and in 1884 director of the department of biology. His published papers on biological subjects number over 800. He died April 30, 1891.

Leigh, a town of England, county of Lancaster, $7\frac{1}{2}$ m. from Bolton. Pop. 28,702.

Leighton (lā'ton), SIR FREDERICK, painter, president of the Royal Academy, born at Scarborough in 1830. At fourteen he entered the Academy of Berlin, but a year later went to Frankfort-on-Main to continue his general education. His subsequent art studies were made at Florence (1845-46), the Academy at Frankfort-on-Main (1846-48), Brussels (1848-49), Paris (1850), and Frankfort again (1851-53). From Rome, where he spent some three winters, he sent to the Academy of 1855 his picture of Cimabue's Madonna carried in procession through the streets of Florence, which called forth general admiration, and was purchased by the Queen. For four subsequent years he resided at Paris, availing himself of the friendly counsel of Ary Scheffer, Robert Fleury, and other painters, and then finally took up residence in London. In 1864 he was elected an associate of the Royal Academy, and in 1869 an Academician. In 1878 he succeeded Sir Francis Grant as president of the Academy, was knighted, and was named an officer of the Legion of Honour. Seven years later he was made a baronet, and he has received various honours and honorary degrees. From the long list of his works special mention may be made of his *Hercules Wrestling with Death* (1871), the *Daphnephoria* (1876), the *Music Lesson* (1877), *Sister's Kiss* (1880), *Phryne* (1882), *Cymon and Iphigenia* (1884), *Captive Andromache* (1888),

and *Ball Players* (1889); and the large frescoes at the South Kensington Museum, representing the Industrial Arts applied to War, and the Arts of Peace. In addition to his pictures he has achieved a high place as a sculptor by his *Athlete Strangling a Python* (1876), and his *Sluggard* (1886). The



Sir Frederick Leighton, P.R.A.

special merit of his work lies in the perfection of his draughtsmanship and design, his colouring, though possessing unfailing charm of harmonious arrangement, being only thoroughly satisfactory from the decorative point of view. A fine poetic quality, conjoined with elegance in drawing and great refinement in execution, marks his whole work.

Leighton, ROBERT, a Scotch prelate, born in Edinburgh or London in 1611. He was educated at Edinburgh University, and then spent about ten years on the Continent, chiefly at Douay. On his return to Scotland in 1641 he became pastor of the parish church of Newbattle, but resigned his living in 1652, and in the following year was chosen principal of Edinburgh University. On the attempt at the accession of Charles II. to establish Episcopacy in Scotland, Leighton accepted reluctantly the bishopric of Dunblane, in the hope of moderating the violent dissensions of the time. He twice visited London (1665 and 1669) to implore the king to moderate the zeal of Sharpe and Lauderdale, and accepted the archbishopric of Glasgow in 1670 only after a promise of court assistance in the attempt to carry out a liberal measure for the comprehension of the Presbyterians. The promise being broken,

he resigned his see, and subsequently resided for the most part at Broadhurst, his sister's estate in Sussex. He died in London 1684. He was celebrated for his learning, gentleness, and disinterestedness. He founded exhibitions in the colleges of Edinburgh and Glasgow.

Leighton-Buzzard, a town of England, Bedfordshire, 18 miles south-west of Bedford, on the Ouse, and near the Grand Junction Canal. It carries on lace-making and straw-plaiting. Pop. 5991.

Leiningen (lin'ing-en), a former principality of Germany, erected in 1779, and divided between Baden, Bavaria, and Hesse at the Peace of Lunéville in 1801.

Leinster (lin'stèr), a province of Ireland, divided into twelve counties — Wexford, Kilkenny, Carlow, Wicklow, Dublin, Kildare, Queen's County, King's County, Westmeath, Longford, Meath, and Louth; area, 7620 sq. miles. Leinster is the most favoured of the four provinces of Ireland in the extent of its tillage and pasture lands, and its wealth in minerals. Pop. 1,195,418.

Leipa, or **LEIPPA** (BÖHMISCH), (beu'mish-lî'pâ), a town of Bohemia, in the circle of Leitmeritz, 43 miles N.N.E. of Prague. Pop. 9372.

Leipoa (lî-pō'a), a genus of gallinaceous birds of the family Megapodidæ, of which the only species is the *Leipoa ocellata* of the naturalists, the *ngow-oo* of the aboriginal Australian, and the 'native pheasant' of the colonists. The bird is a native of Australia, is of the size of a very small turkey, and, like the Australian jungle-fowl, constructs mounds in which to lay its eggs.

Leipzig (lip'zih), or **LEIPSIC**, the second city of the kingdom of Saxony, and one of the chief seats of commerce in Germany, 64 miles W.N.W. from Dresden. It lies in an extensive and fertile plain on the Elster, here joined by the Pleisse and Parthe, and consists of an old central or inner town and more modern and much more extensive suburbs. The market-place in the old town has a picturesque appearance, having about it the town-hall (Rathhaus), built in 1556, and other buildings in the renaissance style. It contains a fine war monument erected in 1888. The Augustus-Platz is one of the finest squares in Germany, overlooked by the university, museum, new theatre, &c. The Pleissenburg or castle, now partly used as a barrack, withstood the attacks of Tilly, and is memorable as the scene of the famous Leipzig disputation between Luther

and Dr. Eck in 1519. The suburbs contain the post-office buildings, the church of St. John, the fine new church of St. Peter, and the Roman Catholic church; the Rosenthal (Valley of Roses), with pleasant wooded walks; and numerous places of recreation. The university, founded in 1409, is the second in importance in Germany (that of Berlin being first), and has over 3000 students, and a library of 350,000 vols. Schools are numerous and good, the conservatory of music being of some celebrity. Besides being the centre of the book and publishing trade of Germany, Leipzig possesses considerable manufactures, and has important general commerce, carried on especially through its three noted fairs at the New-year, Easter, and Michaelmas. Leipzig is of Wendish origin, and dates from the 11th century. It early received the Reformation. In 1631 Gustavus Adolphus defeated Tilly near it at Breitenfeld. It suffered much from the Seven Years' war. On October 16-19, 1813, the great 'battle of the nations' (Völkerschlacht) was fought around and in Leipzig, in which Napoleon received his first defeat. Pop. 1890, 353,272.

Leisnig (lis'nik), a town of Saxony, in the circle of Leipzig and 28 miles from that city, on the left bank of the Mulde. Pop. 7315.

Leistenwein. See *Franconian Wines*.

Leitch, WILLIAM LEIGHTON, landscape-painter, born at Glasgow 1804, died in London 1883. Commencing his career as a house-painter in his native city, he removed to London early in life and practised scene-painting successfully. After five years of study in Italy he settled in London, and gained celebrity as an art teacher. Among his pupils were Queen Victoria and all the members of the royal family. While employed in teaching he rarely exhibited, the drawings which he produced being mostly purchased by his pupils or their friends. At the request of a deputation of influential artists he became a member of the New Society of Painters in Water-colours in 1861, and from that time was a regular contributor to the society's exhibitions, and to those of its successor, the Royal Institute of Water-colour Painters. Many of his subjects are Italian and Sicilian scenery, but scenes in Scotland and elsewhere are not of unfrequent occurrence. His works (mostly in water-colours) are not numerous, but of great merit. They are distinguished by graceful composition, perfect balance of the several parts, and much power in rendering

atmospheric effects. A number of them have been engraved as book illustrations and as separate prints.

Leith (lēth), a seaport and parliamentary burgh in the county of Midlothian, Scotland, about $1\frac{1}{2}$ mile from the centre of Edinburgh, on the south shore of the Firth of Forth, on both sides of the Water of Leith. It is connected with Edinburgh (of which it is the port) by Leith Walk and other lines of streets, and by branch lines of the railways centering in Edinburgh. Among the principal public buildings are the custom-house, exchange buildings, court-house, Trinity House, corn-exchange, &c. The chief manufactures are ropes, sail-cloth, soap, candles, paints, colours, artificial manures, and there are breweries, distilleries, ship-building yards, sugar-refineries, iron-foundries, engine-works, &c. The foreign trade is chiefly with the Continent, particularly with the ports on the Baltic, and the principal French and German ports; there is also some colonial and an important coasting trade. There are extensive wet-docks, and three public graving-docks, capable of receiving the largest vessels. Leith is mentioned for the first time, under the name of Inverleith, in a charter of David I. granted in 1128; and in 1329 a charter of Robert I. made a grant of the port and mills of Leith to the city of Edinburgh. It did not obtain a separate and independent magistracy till 1832. Leith unites with Musselburgh and Portobello in sending a member to the House of Commons. Pop. 1891, 69,696.

Leitha, or **LEYTHA** (lī'tā), a river rising in Lower Austria and forming for some distance the boundary between the two divisions of the Austro-Hungarian empire (the Cis-Leithan or Austrian and the Trans-Leithan or Hungarian); afterwards passing into Hungary and joining the Danube at Altenburg.

Leitmeritz (lit'me-rits), a town of Bohemia, beautifully situated on a height above the right bank of the Elbe, 34 miles north-west of Prague. It is the see of a bishop, and contains a fine old cathedral. Pop. 10,854.

Leitrim (lē'trim), a county of Ireland, bounded by Donegal Bay and the counties of Donegal, Fermanagh, Cavan, Longford, Roscommon, and Sligo; about 51 miles long by 21 broad; area, 392,363 acres. A considerable portion of its western boundary is formed by the Shannon, which first flows through Lough Allen, a lake situated near

the centre of the county, and almost cutting it in two. The surface in the north is somewhat rugged and mountainous, but elsewhere generally flat and in part moorish. In the valleys the soil, resting generally on limestone, is fertile. The principal crops are oats and potatoes. The minerals include iron, lead, and copper, all at one time worked, and coal, still raised to some extent. It sends two members to parliament. County town, Carrick-on-Shannon. Pop. 1891, 78,379.

Leland, **CHARLES GODFREY**, American author, born at Philadelphia 1824; studied law, but abandoned it for a literary life. He is best known through his quaint *Hans Breitmann Ballads in Pennsylvania Dutch*, and his works on the language and poetry of the Gypsies.

Leland, or **LAYLONDE**, **JOHN**, an English antiquary, born in London about 1500, educated at St. Paul's School, and Christ's College, Cambridge, afterwards studying at Oxford and at Paris. On his return Henry VIII. made him his chaplain and librarian, and gave him the title of royal antiquary. In 1533 he was empowered, by a commission under the great seal, to search for objects of antiquity in the archives and libraries of all cathedrals, abbeys, priories, &c., and having spent six years in travelling for this purpose he retired to his house in London to arrange and methodize the mass of historical material acquired. He died insane, however, in 1552, without having completed his task. The great bulk of his collections was ultimately placed in the Bodleian Library in an indigested state. Hearne printed a considerable part, forming the *Itinerary of John Leland*, and *Lelandi Antiquarii de Rebus Britannicis Commentarii*. His collections have been sedulously mined by subsequent antiquaries.

Leland, **JOHN**, an English Presbyterian divine, born at Wigan in 1691. Early in life he became the pastor of a Dissenting congregation in Dublin, and remained there till his death in 1766. He acquired considerable reputation by his *View of the Deistical Writers that have appeared in England in the last and present century (1754-56)*.

Le'ly, **SIR PETER**, painter, born at Soest, in Westphalia, in 1617 or 1618. Lely or Le Lys was properly a nickname borne by his father, whose family name was Van der Taes. He was first instructed by Peter Grebber at Haarlem, but came to England in 1641, and commenced portrait-painting,

He finished portraits both of Charles I. and of Cromwell; but it was not until the Restoration that he rose to the height of his fame. He fell in with the voluptuous taste of the new court, and was in great favour with Charles II., who knighted him. He died in 1680. The Hampton Court collection of portraits of the ladies of the court of Charles II. contains some of his best work; the finest of his few historical works being the Susannah and the Elders, at Burleigh House.

Leman, LAKE, a name sometimes given to the Lake of Geneva. See *Geneva*, *Lake of*.

Lemberg (Polish, *Lwow*), a city of Austria, capital of the Kingdom of Galicia, on the Peltew, 365 miles E.N.E. from Vienna. Though founded in the 13th century, it has all the appearance of a modern town from its rapid increase in recent times. Besides being the seat of the government, and the important courts and public offices necessarily connected with it, it possesses three metropolitan sees—Greek, Armenian, and Roman Catholic. It has a university (library 86,000 volumes), attended by about 1400 students; and the Ossolinsk Literary Institute (library 78,000 volumes). The manufactures are extensive and varied, and there is a large trade, which is very much in the hands of the Jews, who here number more than 30,000. Pop. 1890, 128,419.

Lemma, in mathematics, a preliminary proposition, laid down in order to clear the way for some following demonstration, and prefixed either to theorems, in order to render their demonstration less perplexed and intricate, or to problems, to make their solution more easy and short.

Lemming, a rodent mammal very nearly allied to the mouse and rat. There are



Common Lemming (*Myodes Lemmus*).

several species, found in Norway, Lapland, Siberia, and the northern parts of America. The most noted species is the common or European lemming (*Myodes Lemmus*), of

which the body colour is brownish variegated with black; the sides of the head and belly white, or of a grayish tint. The legs and tail are of a gray colour. The head is large and shortened, the body thick-set, and the limbs stout. It feeds on plants, and is exceedingly destructive to vegetables and crops. It burrows under the ground at a limited depth. It is very prolific, and vast hordes sometimes migrate towards the Atlantic and the Gulf of Bothnia, destroying all vegetation in their path. Great numbers of wild animals—bears, wolves, foxes—hang upon them in their march, making them their prey, thus tending to keep their numbers in some degree in check.

Lemna. See *Duck-weed*.

Lemnian Earth, a kind of astringent medicinal earth, of a fatty consistence and reddish colour, used in the same cases as bole. It removes impurities like soap. It was originally found in Lemnos, but occurs also in Bohemia, Russia, and India, resulting from decay of felspathic rocks, like kaolin, to which it is related. Called also *Sphragide*.

Lemniscata, or LEMNISCATE, in geometry, the name given to a curve having the form of the figure 8, with both parts symmetrical.

Lemnos (now *Stalimene*), the most northerly island of the Grecian Archipelago, between the Hellespont and Mount Athos. It has an area of 147 square miles, and abounds in vines, wheat, &c. The principal town on the island is Limno, or Kastro. Lemnos formerly contained a volcano, Mosychlus, which was regarded as the workshop of Hephaistos (Vulcan). Pop. 22,000.

Lemoine (lè-mwân), FRANÇOIS, French historical painter, born in 1688. In 1718 he became member of the Academy, and on his return from a visit to Italy in 1723 was appointed professor at the Academy. He painted the chapel of the Holy Virgin in the church of St. Sulpice, and subsequently the ceiling in the Hall of Hercules at Versailles, a painting 64 feet long and 54 broad, which occupied him seven years. In a fit of insanity he put an end to his life in 1737.

Lem'on, the fruit of the lemon-tree (*Citrus Limonum*), originally brought from the tropical parts of Asia, but now cultivated very extensively in the south of Europe, especially in Sicily. It is congeneric with the orange and citron, and belongs to the natural order Aurantiaceæ. It is a knotty-wooded tree of rather irregular growth, about 8 feet high; the leaves are oval, and

contain scattered glands which are filled with a volatile oil. The shape of the fruit is oblong, and its internal structure is similar to that of the orange. The juice is acid and agreeable; and in addition to its use in beverages is employed by calico-printers to discharge colours. As expressed from the ripe fruit it has a specific gravity of 1·04, and contains about 1·5 per cent of citric acid. It also contains sugar, albuminous and vegetable matters, and some mineral matter, nearly half of which consists of potash. The *oil of lemon* is a volatile oil of yellow or greenish colour got from the fresh rind of the lemon. It is used in perfumery, and in medicine as a stimulant and rubefacient; it also forms an ingredient of syrup of lemon and tincture of lemon.

Lemon, MARK, humorist and dramatic writer, born in London in 1809. He made his first literary essays in the lighter drama, supplying the London stage with more than sixty pieces, farces, melodramas, and comedies. On the establishment of *Punch* in 1841 he became joint-editor with Henry Mayhew, and two years later sole editor. He was also the literary editor of the *Illustrated London News*, and an occasional writer for *Dickens' Household Words*, *Once-a-Week*, and other periodicals. Among his later productions are some novels of average merit. He died in 1870.

Lemonade, a drink made of water, sugar, and the juice of lemons. A good recipe is: two sliced lemons, $2\frac{1}{2}$ oz. of sugar, boiling water, $1\frac{1}{2}$ pint; mix, cover up the vessel, let it stand, with occasional stirring, till cold, then strain off the liquid. Aerated bottled lemonade may be prepared by putting lemon syrup into a bottle, and filling up with aerated water at a bottling machine.

Lemon-kali, a name sometimes given to the effervescing beverage formed by mixing lemon-juice with dissolved bicarbonate of potash.

Lemons, SALT OF. See *Sorrel, Salt of*.

Lempriere (lem'pri-ār), **JOHN, D.D.**, a native of Jersey, born about 1750, graduated at Oxford as A.M. in 1792, in which year he became head-master of Abingdon grammar-school. He was afterwards master of the free grammar-school at Exeter. In 1811 he was presented to the rectory of Meeth, Devonshire, which living, together with that of Newton Petrock, in the same county, he held till his death. His *Classical Dictionary*, published in 1792, was of great

value in its day. Amongst his other works was a *Universal Biography*, published in 1808. He died in 1824.

Le'mur, a name popularly given to any member of the *Lemniroidea*, a sub-order of the *Quadrumania* or Monkeys, but more strictly confined to members of the family *Lemuridæ*. Their zoological position has been a matter of considerable debate, as



Red Lemur (*Lemur ruber*).

they possess characteristics which distinguish them from the monkeys, and ally them with the insectivores and rodents. The simplest classification places them, however, with the lower *Quadrumania*. The *Lemuridæ* or True Lemurs are specially distinguished by the habitually four-footed or quadrupedal mode of progression. The tail (except in the short-tailed *Indris*) is elongated and furry, but is never prehensile. The hind limbs are longer than the fore limbs; the second toe in the hind foot being long and claw-like, and the nails of all the other toes being flat. The fourth digit of the hand, and especially of the foot, is longer than the others. The thumb can always be opposed to the other fingers, and has a broad, flattened nail. The ears are small and the eyes large. The incisor teeth are generally four, the canines two, and the molars twelve in each jaw. The true lemurs are exclusively confined to Madagascar and neighbouring islands, but other members of the family are found in Africa and as far east as the Philippines. They are all arboreal in their habits, and subsist chiefly upon a vegetable diet, but also eat insects, and the smaller birds and their eggs.

Lem'ures, among the ancient Romans, the name given to the ghosts or souls of the dead. In order to appease them a ceremony called *lemuria* was observed on the nights of the 9th, 11th, and 13th May.

Lemu'ria, a hypothetical continent supposed by some to have at one time extended from Madagascar and S. Africa across what is now the Indian Ocean to the Asiatic Archipelago: named from its corresponding with the habitat of the lemurs.

Lemuroi'da. See *Lemur*.

Lena, a river of Siberia, one of the largest in the world, rising on the north-western side of the mountains which skirt the western shore of Lake Baikal, about 70 miles E.N.E. of Irkutsk. It flows in a winding course, and discharges itself through several branches into the Arctic Ocean in lat. 73° N., and lon. about 128° E. Its course, windings included, is about 2770 miles.

Lenclos (lân-klō), **ANNE**, a notorious Frenchwoman, better known as *Ninon de Lenclos*, born at Paris in 1615 or 1616, died 1705. Notwithstanding her reputation for gallantry the most respectable ladies of the time, such as La Fayette, La Sablière, and Maintenon, cultivated her friendship, and in her old age her house was the rendezvous of the most distinguished personages of the city and court. Scarron consulted her on his romances, St. Evremond on his poems, Molière on his comedies, Fontenelle on his dialogues, and La Rochefoucauld on his maxims. Richelieu is said to have been her first lover, and Coligny, Condé, Sévigné, &c., were her lovers and friends. She retained the charms of her manners and conversation, and to some extent of her person, to extreme old age. She died 1705. Certain spurious letters pass under her name.

Lenkoran', a Russian town and harbour on the Caspian Sea near Baku. Pop. 5540.

Lennepe, a town of Prussia, province of Rheinland, 21 miles E.S.E. of Düsseldorf, with worsted and woollen manufactures. Pop. 8844.

Lennepe, **JACOB VAN**, Dutch novelist, historian, and dramatist, born 1802, died 1868. He was a successful advocate, and was attorney-general for North Holland. In literature he was representative of the romantic movement in Holland. He left upwards of thirty plays, a collection of poems, and several historical works, but is perhaps best known by his historical romances, *De Roos van Dekamā*, *Klaasje Zevenster*, &c.

Lenni-Lenape, the name by which the Delaware Indians call themselves. See *Delaware*.

Lennox, **CHARLOTTE RAMSAY**, novelist, was born in New York in 1720, but lived from the age of fifteen in London, where she

died in 1804. She was friendly with Richardson and Johnson, who is said to have written the last chapter of the *Female Quixote* (1752), the best known of her works. Her other works included *Shakspeare Illustrated* (1753-54), a collection of the tales used by Shakspeare for his dramas, a translation of Sully's *Memoirs*, *Henrietta* (1758), *Philander* (1758), *Sophia* (1763).

Lennoxtown, a town of Scotland, county of Stirling, 9 miles north of Glasgow, with print-works, bleach-fields, alum-works, &c. Pop. 3249.

Lenocinium, in Scots law, the connivance of the husband at his wife's adultery.

Lenormant (lê - nor - măn), **CHARLES**, French archæologist, born 1802; in 1825 made inspector of fine arts. He accompanied Champollion to Egypt in 1828, and afterwards became chief of the section of fine arts at the ministry of the interior, professor at the Sorbonne, and professor of Egyptian archæology at the College of France. He left a considerable number of treatises in various departments of archæological research. Died 1859.

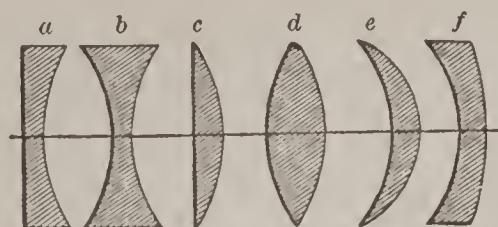
Lenormant, **FRANÇOIS**, French archæologist, born 1837; son of Charles Lenormant. After travelling in the East he became, in 1874, professor of archæology at the Bibliothèque Nationale. He died in 1883. He was an authority on the Cuneiform inscriptions and the Accadian language.

Lenox, **JAMES**, philanthropist, born in New York city in 1800. From his father he inherited several millions of dollars. For half a century his time was devoted to the forming of a library and gallery of paintings, which he conveyed to New York city in 1870, the total value being over \$2,000,000. He was a liberal donor to many churches and charities. He died in 1880.

Lenôtre (lê-nōtr), **ANDRÉ**, a French architect and ornamental gardener, born 1613. His plans for the decoration of the park of Versailles contributed principally to establish his reputation. He afterwards embellished the gardens of Trianon, Chantilly, St. Cloud, Sceaux, the Tuileries, &c. Louis XIV. in 1675 bestowed on him letters of nobility. He died in 1700. His style of ornamental planting was fashionable in Britain, till it was superseded by the designs of Kent, Brown, and the modern landscape gardeners.

Lens, a transparent substance, usually glass, so formed that rays of light passing through it are made to change their direc-

tion, and to magnify or diminish objects at a certain distance. Lenses are double convex, or convex on both sides; double-con-



Sections of Lenses.

a, Plano-concave.
c, Plano-convex.
e, Meniscus.

b, Double-concave.
d, Double-convex.
f, Concavo-convex.

cave, or concave on both sides; plano-convex, or plano-concave, that is, with one side plane and the other convex or concave, or convex on one side and concave on the other. If the convexity be greater than the concavity, or if the two surfaces would meet if produced, the lens is called a *meniscus*; and if the concavity be greater than the convexity, the lens is termed *concavo-convex*. See *Optics*, *Microscope*, *Telescope*.

Lent, the forty days' fast in spring, beginning with Ash Wednesday and ending with Easter Sunday. In the Latin Church Lent formerly lasted but thirty-six days; in the 5th century four days were added, in imitation of the forty days' fast of the Saviour, and this usage became general in the Western Church. The close of Lent is celebrated in R. Catholic countries with great rejoicings, and the Carnival is held just before it begins. The English Church has retained Lent and many other fasts, but gives no directions respecting abstinence from food.

Lentibulariæ, a small natural order of monopetalous exogens, growing in water or in marshy places, sometimes epiphytes. The flowers (often large and handsome) are usually yellow, violet, or blue. There are four genera, of which *Utricularia* (bladderwort) and *Pinguicula* (butterwort) are the best known.

Lentil (*Ervum lens*), a plant belonging to the papilionaceous division of the nat. order Leguminosæ, cultivated in Southern and Central Europe. It is an annual, rising with weak stalks about 18 inches, and with whitish flowers hanging from the axils of the leaves. Two varieties are cultivated—the large *garden lentil* and the common *field lentil*,—the former distinguished by its size and the greater quantity of mealy substance which it will afford. The straw of lentils makes good fodder. As food for man the seeds are very nutritious, and in

Egypt, Syria, &c., are a chief article of diet. In Great Britain their use for food has increased of late years, and it is to them that the foods advertised as revalenta or ervalenta owe their name.

Lenti'ni, a town of Sicily, province of Syracuse. It has interesting ruins, and a considerable trade. Pop. 13,202.

Lentis'cus, or **LENTISK**, the mastich-tree (*Pistacia lentiscus*), a tree of the nat. order Anacardiaceæ, a native of Arabia, Persia, Syria, and the south of Europe. The wood is of a pale brown, and resinous and fragrant. See *Mastich*.

Lento (Italian, *slow*), a term used in music; rather faster than adagio.

Leo, the Lion, the fifth sign of the zodiac, between Cancer and Virgo. The sun enters it about July 22, and leaves it about August 23. The constellation contains 95 stars, and is noteworthy for its remarkable nebulæ.



Lentil (*Ervum lens*).

There is also a constellation of the northern hemisphere known as Leo Minor, and containing 53 stars.

Leo I., St. LEO, called *the Great*, pope, born about 390. The Popes Celestine I. and Sixtus III. employed him in important ecclesiastical affairs, and on the death of Sixtus III. in 440 he was elevated to the papal chair. The beginning of his pontificate was marked by persecutions of all holding the Manichean, Pelagian, Priscillian, and Eutychean heresies. He was em-

ployed by Valentinian to intercede for peace with Attila, who, at his request, evacuated Italy. From the Vandal Genseric, however, he was unable to obtain more than the promise to forbid the murder of the citizens, the burning of the city, and the plunder of the three principal churches in Rome. His death took place in 461. He is the first pope whose writings — sermons, letters, &c. — have been preserved. In his main ambition to establish the supremacy of the Apostolic chair over the whole Christian Church he was defeated at the Council of Chalcedon (451), which affirmed the independence of the see of Constantinople.

Leo III., a Roman by birth, elected pope on the death of Adrian I. in 795. He commenced his rule by making submission to Charlemagne, so that when driven from Rome in 799 by his rival Paschal, Charlemagne re-established him on his throne, receiving from him in 800 the imperial crown. Leo died in 816.

Leo X., GIOVANNI DE' MEDICI, second son of Lorenzo the Magnificent, born at Florence in 1475, received the tonsure in his seventh year, and was loaded with benefices. In 1488, when only thirteen years old, he was made a cardinal, and in 1492 took his seat as a member of the Holy College at Rome. Pope Julius II. made him governor of Perugia, and in 1511 placed him, with the title of Legate of Bologna, at the head of his forces in the holy league against France. He was made prisoner by the French at the battle of Ravenna in 1512, but soon after regained his freedom and returned to Bologna, where he conducted the government as legate. After contributing to the re-establishment of the Medici he remained at Florence until the death of Julius II. recalled him to Rome. Although only a deacon, he was chosen to succeed Julius in 1513. He made a favourable peace with Louis XII., who was compelled to abandon Italy, and public tranquillity being thus restored in the first year of his government, he gave all his attention to the promotion of literature and the arts. The university at Rome was restored and endowed; a society established for the publication of Greek authors, and great encouragement given to scholars. In 1515 he had an interview with Francis I. at Bologna, and formed with him a concordat, which remained in force nearly three hundred years, and gave to the king the right to nominate bishops in his own dominions. To procure

money, particularly for the completion of St. Peter's, he encouraged the sale of indulgences, an abuse which incidentally promoted the Reformation, in calling forth the attacks of Luther. Leo died suddenly in 1521.

Leo'ben, a town of Austria, in Styria, 25 miles N.N.W. of Gratz, on the right bank of the Mur. Pop. 5491.

Leobschütz (lā'op-shüts), a town of Prussia, province of Silesia, 31 miles S.S.W. Oppeln, on the Zinna. Manufactures: woollen and linen cloth, ribbons, and leather. Pop. 12,239.

Leominster (lem'stēr or lem'in-stēr), an old municipal (formerly a parl.) borough and market town of England, county of Hereford, 12 miles north of Hereford, in a fertile valley on the right bank of the Lugg. The spacious priory church (restored and enlarged in 1866 and 1879) exhibits fine specimens of Norman and Early English architecture. Leather glove making is the chief industry. Pop. 1891, 5675.

Leominster, a town of the United States, Worcester county, Massachusetts, on the Nashua River, 40 miles W.N.W. of Boston. It is the centre of the comb manufacture of the state. Pop. 1890, 7269.

Leon (lā-ōn'), one of the old divisions of Spain, formerly a kingdom, is bounded north by Asturias, east by Old Castile, south by Estremadura, and west by Portugal and Galicia. It is now divided into the provinces of Leon, Zamora, and Salamanca.

Leon, a town of Spain, capital of the province and ancient kingdom of the same name, 176 miles north-west of Madrid. It is for the most part in a somewhat decayed condition. The principal edifices are the cathedral, a beautiful specimen of the purest Gothic; the church of San Isidoro, an ancient massive structure; and the fine old palace, called La Casa de los Guzmanes. Pop. 11,314. — The province has the Asturias as its northern boundary, a branch of which mountains divides it into two portions. The western portion is adapted rather for pasture than tillage, but the eastern has wide and undulating plains, on which the vine and various grain crops are successfully cultivated. Area, 6166 square miles. Pop. 370,000.

Leon, a town of Central America, capital of the department of Leon, state of Nicaragua, on a large and fertile plain near the Pacific coast. It is regularly built, and the public buildings, which are considered among

the finest in Central America, include a massive cathedral, an old episcopal palace, a new episcopal palace, and several churches. A railway connects it with the coast at Corinto. The town has suffered a good deal from the civil wars. Pop. 25,000.

Leon, a town of Mexico, state of Guajuato, on a fertile plain more than 6000 feet above sea-level, a well-built place, with flourishing industries of various kinds, which its railway connections are helping to develop. Pop. 1890, 47,739.

Leonardo da Vinci. See *Vinci*.

Leonard's, St. See *Hastings*.

Leonfor'te, a town of Sicily, in the province of Catania, and 37 miles W.N.W. of Catania. It carries on a considerable trade in corn, wine, and silk. Pop. 15,645.

Leon'idas, in Greek history, a king of Sparta, who ascended the throne 491 B.C. When Xerxes invaded Greece, the Greek congress assigned to Leonidas the command of the force destined to defend the pass of Thermopylæ. His force, according to Herodotus, amounted to over 5000 men, of whom 300 were Spartans. After the Persians had made several vain attempts to force the pass, a Greek named Ephialtes betrayed to them a mountain path by which Leonidas was assailed from the rear, and he and his followers fell after a desperate resistance (B.C. 480).

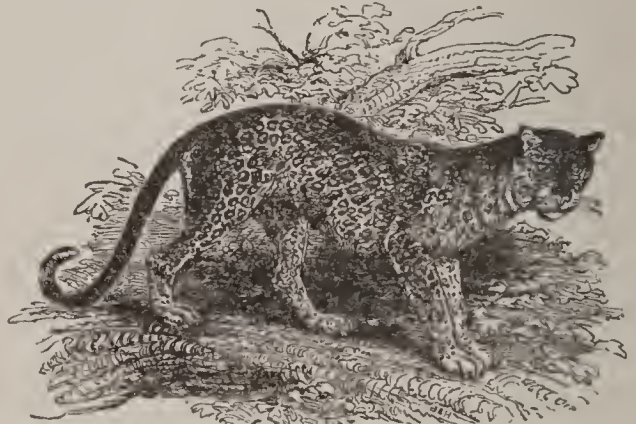
Le'online Verse, a kind of Latin verse, in vogue in the middle ages, consisting of hexameters and pentameters, of which the final and middle syllables rhyme; so called from Leo or Leonius, a poet of the 12th century, who made use of it. The following distich may serve as an example, being the Latin version of 'The devil was sick,' &c.:—

'Dæmon languebat, monachus tunc esse volebat;
Ast ubi convaluit, mansit ut ante fuit.'

Leon'todon. See *Dandelion*. But dandelion is often put in a separate genus, *Taraxacum* (being called *T. officinæ* or *T. dens-leonis*), certain allied plants being assigned to *Leontodon*.

Leopard (*Felis leopardus*), a carnivorous mammal inhabiting Africa, Persia, India, China, &c., by some regarded as identical with the panther. The ground or general body-colour of both is a yellowish fawn, which is slightly paler on the sides, and becomes white under the body. Both are also marked with black spots of various sizes, irregularly dispersed, a number of them

being ring-shaped. The African animal seems to have these ring-spots chiefly on the back, and to this form some would specially assign the name of leopard. It preys upon antelopes, monkeys, and the



Leopard (*Felis leopardus*).

smaller quadrupeds, rarely attacking man unless itself attacked. It can ascend trees with great ease, often using them both for refuge and ambush. It is not infrequently trapped by means of pitfalls. Besides the common leopard there is also a useful and docile Asiatic species, the chetah or hunting leopard (*Felis jubata*). See *Chetah*.

Leopardi, GIACOMO, COUNT, Italian poet and scholar, born in 1798. He conducted his own education, and at an early age he had written a History of Astronomy, and translated, with learned notes, Porphyry's Life of Plotinus. He also translated into Italian verse the Battle of the Frogs and Mice, some fragments of the Odyssey, &c. A commentary on Petrarch, and an essay on the errors of the ancients, appeared in 1815; and in 1818–20 an ode to Italy and other poems raised him to the first rank of lyric poets. He lived at various times in Rome, Milan, Bologna, Florence, almost constantly a victim of ill-health; in 1833 he removed to Naples, where he died 14th June, 1837.

Leopard's-bane, *Doronicum pardaliches*, natural order Compositæ, a robust plant, with large roughish leaves and conspicuous yellow flower-heads.

Leopard-wood, the wood of *Brosimum Aublettii*, a tree of Trinidad and Guiana, allied to the cow-tree.

Le'opold I., King of the Belgians, son of a Duke of Saxe-Coburg, was born in 1790. In 1816 he married the Princess Charlotte, heir-apparent of Great Britain, who died in 1817. In 1831 he accepted the crown of Belgium. He married a daughter of King

Louis Philippe of France, by whom he became the father of Leopold II., the present Belgian sovereign. After a prosperous and uneventful reign he died in 1865.

Leopold I. See *Germany*.

Lepad'idæ, the barnacles or goose-mussels, a family of cirriped crustaceans, free-swimming when in the larva state, but when adult attached by the antennæ to submarine bodies. See *Barnacle*.

Lepan'to, or ΕΠΑΚΤΟ (ancient *Naupactus*), a seaport town of Greece, in the nome of Phokis, on the Gulf of Corinth or Lepanto, near the Strait of Lepanto. Its harbour is now silted up, but it was anciently of considerable importance. It is memorable for the naval battle, from which dated the decline of the Turkish power in Europe, fought within the gulf on 7th October, 1571, between the Ottoman fleet and the combined fleets of the Christian states of the Mediterranean, under Don John of Austria, when the former, consisting of 200 galleys and 60 other vessels, was destroyed.—The strait connects the Gulf of Corinth with the Gulf of Patras, and is about 1 mile wide at its narrowest part.

Lepas, the generic name of the barnacles. See *Lepadidæ* and *Barnacle*.

Leper. See *Leprosy*.

Leper-houses, houses for the treatment of leprosy; once very numerous in England, nearly every important town having one or more of these houses. The house of Burton Lazars in Leicestershire, built by a general subscription raised over England in the time of King Stephen, was the head of all leper-houses in England. It was dependent on the leper-house at Jerusalem. From the Crusades until the Reformation these houses flourished and multiplied. Gradually, however, as better habits and treatment began to diminish diseases of the class for which they were used, these houses declined, and were abandoned or appropriated to other objects.

Lepid'ium, an extensive genus of herbs or undershrubs of the nat. order Cruciferae. *L. sativum* is the common garden-cress.

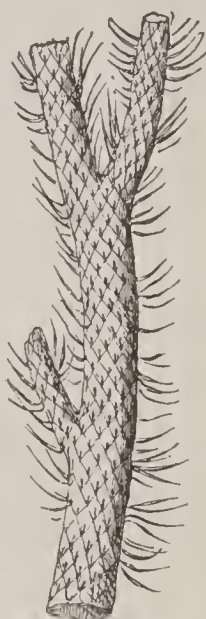
Lepidoden'dron (Greek *lepis*, scale, and *dendron*, tree), a genus of fossil plants, cryptogamic and acrogenous. The stalks are dichotomous, the leaves simple, linear, or lanceolate, but only towards the extremity. Their internal structure is intermediate between that of the Coniferae and Lycopodiaceae. They are found only in the coal-measures. Some of the species were of

immense size, fragments of stems being found upwards of 40 feet in length.

Lepidoganoi'dei, a sub-order of ganoid fishes, distinguished from the placogonoid fishes by their external covering consisting of scales, and not, as in the latter, of plates. The best-known living fishes belonging to the Lepidoganoidei are the bony pike and the polypterus.

Lepid'olite, or LITHIA MICA, a species of mica occurring in oblique rhombic or hexagonal prisms, or in masses composed of small crystalline scales. Its colour is pink or peach-blossom, passing into gray; lustre pearly; easily split into thin translucent flexible scales or plates. The mineral is one of the principal sources of the metal lithium.

Lepidop'tera (Greek, *lepis*, a scale; *pteron*, a wing), the scientific name of the order of insects which includes the butterflies and moths (which see), and which is so named from the presence of innumerable small membranous scales, which come off like fine dust or powder when the wings (four in



Lepidodendron Sternbergii.



Lepidoptera.

1, Butterfly—*Hipparchia galathea*, marbled white butterfly. 2, Hawk-moth or sphinx—*Macroglossa stellatarum*, humming-bird hawk-moth. 3, Moth—*Abraxas grossulariata*, magpie moth. 4, Palpi and spiral mouth of butterfly. 5, Antennæ—*a*, Butterfly's; *b*, Sphinx's; *c*, Moth's. 6, Portion of wing of cabbage-butterfly, with part of the scales removed. 7, Scales of do. magnified.

number) are touched by the finger. The scales are merely modifications of the hairs with which the wings of most other insects are covered; and from the presence of these

scales the beautiful tints and colours of the lepidopterous insects are derived. The Butterflies form the *diurnal* Lepidoptera; whilst the Moths, flying about chiefly at twilight or during the night, are termed *crepuscular* or *nocturnal* Lepidoptera.

Lepidosi'ren, the scientific appellation of the mud-fishes. See *Dipnoi*.

Lepidos'teus, the generic name of the bony pike of the North American lakes. See *Bony Pike*.

Lep'idus, M. ÆMILIUS, Roman triumvir, prætor B.C. 49, consul with Julius Cæsar in 46, and in 44 appointed by Cæsar to the government of Narbonese Gaul and Nearer Spain. He was in Rome at the time of Cæsar's death, and joined Mark Antony. In 43 he united with Antony and Octavianus to form the triumvirate, obtaining Spain and Narbonese Gaul in the division of the empire. After the battle of Philippi (42) a re-division took place, in which Lepidus received Africa, where he remained till 36, when he was summoned by Augustus to assist him against Sextus Pompey. He then tried to seize Sicily, but was overcome by Augustus, who deprived him of his triumvirate, and banished him to Circeii, where he lived under strict surveillance. He died B.C. 13.

Lepis'midæ, a family of minute wingless insects belonging to the order Thysanura, having the abdomen furnished at its extremity with three caudal bristles, which are used in leaping. The common species (*Lepisma saccharina*) is found under wet planks, or in similar damp situations.

Lepor'idæ, the hare tribe, or the family of rodents of which the genus *Lepus* is the type.

Lep'rosy (Greek, *lepros*, rough), a name applied at one time to several different skin diseases characterized by roughness or scalliness. True leprosy is the elephantiasis of the Greeks, the lepra of the Arabs, whose old English name was the *myekle ail* or great disease. It is to be distinguished from the elephantiasis of the Arabs, which is a local overgrowth of skin and subcutaneous tissue, chiefly of the extremities and genital organs, and is non-contagious. Of true leprosy there are several well-marked types. The first is characterized by the formation of nodules or tubercles in the skin, common about the eyebrows, where they destroy the hair, and produce a frowning or leonine aspect. After a time the nodules break down, forming ulcers, which

discharge for a time, and may cause extensive destruction and deformity. The tubercles may form in the nostrils, in the throat altering the voice, on the eyelids extending into and destroying the eyeball. In the second type the chief features are insensibility and numbness of parts of the skin, accompanied by deep-seated pains, causing sleeplessness and restlessness. In a third variety much mutilation occurs owing to the loss of bones, chiefly of the limbs, a portion of a limb being frequently lopped off painlessly at a joint. All these varieties begin with the appearance on the skin of blotches of a dull coppery or purplish tint, the affected part being thickened, puffy, and coarse-looking. When the redness disappears a stain is left, or a white blotch. Leprosy is now believed to be caused by a minute organism—a bacillus (see *Germ Theory of Disease*), and to be contagious. Though the disease is not so widespread as at one time it was, it still prevails in Norway and Iceland, the coasts of the Black Sea and Mediterranean, in Madagascar, Mauritius, Madeira, the Greek Archipelago, East and West Indies, Palestine, the Pacific Islands, &c.

Lep'sius, KARL RICHARD, distinguished German Egyptologist, born 1810, died 1884. After studying at Leipzig, Göttingen, and Berlin, he carried on studies and researches at Paris, Rome, and London, and he also made two visits to Egypt. He was professor in the Berlin University, director of the Egyptian section of the royal museum, director of the royal institute, head of the royal library, &c. He was author of a large number of important works on Egyptian subjects.

Leptocar'dia, Müller's name for the lowest order of fishes, represented by the lancelet, now called Pharyngobranchii.

Lepus, the genus of rodents which comprises the hares and the rabbits.

Lerici (lā'ri-chē), a seaport of Northern Italy, in the province of Genoa, on the eastern shore of the Gulf of Spezzia, 57 miles E.S.E. of Genoa. Pop. 5217.

Ler'ida (ancient *Ilerda*), a town of Spain, province of Lerida, Catalonia, on the right bank of the Segre, here crossed by a handsome bridge of seven arches, 84 miles W.N.W. of Barcelona. As the key of Aragon and Catalonia it was early fortified, and still continues to be one of the most important military points in Spain. Pop. 17,672.—The province, bounded north by France, has an

area of 4774 square miles, traversed by ramifications of the Pyrenees. Pop. 291,624.

Lérins (lā-ran'), THE, several small islands off the south coast of France. The largest, St. Marguerite, is occupied by a prison, especially famous as the residence for twelve years of the Man in the Iron Mask. The second, St. Honorat, contains the ruins of a once celebrated monastery.

Lerma, FRANCISCO GOMEZ DE SANDOVAL Y ROJAS, DUKE OF, born about 1550, Spanish minister under Philip III. from 1598 to 1618. His career was chiefly marked by the unfavourable terms on which he concluded peace with England (1604) and the United Provinces (1608); and by the decree of proscription issued in 1609, which drove thousands of Moorish families from Spain and confiscated much of their property. Under Philip IV. his administration of the treasury was challenged, and he was compelled to refund considerable sums. He died in 1625.

Lermontoff, MICHAEL, Russian poet, born 1814, killed in a duel 1841. He was for a time an imperial page, and then an officer of the guard. His first important poem, on the death of Pushkin, caused his temporary banishment to the Caucasus. His poems, which include *The Novice*, *The Demon*, *Ismail Bey*, &c., belong to the Byronic school.

Lernæ'adæ, a group of parasitic suctorial crustaceans, of the order Ichthyophthira or fish-lice, having the mouth armed with piercing mandibles, and found attached to fishes. The young lernæan as it first comes from the egg is provided with eyes, antennæ, and locomotive limbs, but the limbs, eyes, and other organs of sense disappear when it assumes the parasitic condition.

Leros, a Turkish island in the Ægean, off the coast of Asia Minor, 35 miles south of Samos; length 6 miles, width 4 miles; pop. 3000.

Leroux (lé-rö), PIERRE, writer on social and economic questions, born at Paris 1798. For some time his journal the *Globe* was an important Saint-Simonian organ, but he afterwards withdrew from that body. He was editor of the *Revue Encyclopédique* (1832), and part editor of the *New Encyclopedia* (1838). He was afterwards associated with Viardot and George Sand in founding the *Revue Indépendante* (1841), and sat in the National Assembly (1848) as an extreme radical. From 1851 to 1869 he lived in Jersey and Switzerland, but returned to

Paris after the amnesty, and died there in 1871. His chief work was his *De l'Humanité* (1839).

Lerwick (ler'wik), a seaport town of Scotland, capital of Shetland, in Bressay Sound, on the south-eastern shore of Mainland. There are no manufactures of consequence; but the trade, favoured by the fine anchorage in the bay, is considerable. Many of the inhabitants are employed in the fisheries. Pop. 4772.

Le Sage, or LESAGE (lê-săzh), ALAIN RENÉ, French novelist and dramatic writer, born in 1668 at Sarzeau, in Brittany. He studied at the college of the Jesuits at Vannes, in 1692 went to Paris to study law, and in 1694 he married. To procure a livelihood he abandoned law for literature, his first attempts being in imitation of the Spanish drama. He subsequently translated Avelaneda's continuation of the *Adventures of Don Quixote*, and a comedy of Calderon; but his first success was with his *Crispin Rival de son Maître* (1707). *Le Diable Boiteux*, initiated from a Spanish romance, *El Diablo Cojuelo*, appeared the same year. In 1715 he published the first two volumes of *Gil Blas*, one of the best romances in the French language, the third volume appearing in 1724, the fourth in 1735. In 1732 he published *Les Aventures de Guzman d'Alfarche* (based on Aleman's work); and the following year *Les Aventures de Robert, dit le Chevalier de Beauchesne*, containing the real history of a freebooter, from papers furnished by his widow. In 1734 appeared *L'Histoire d'Estevanille Gonzales*. The last of his novels was *Le Bachelier de Salamanca* (1738). He died in 1747. He wrote also many theatrical pieces, &c.

Lesbos, a Greek island situated off the north-west coast of Asia Minor, now called *Mitylene*, from its capital. In shape it is nearly triangular; has an area of 276 square miles, and a population of about 40,000, and now belongs to Turkey. It is mountainous, but is exceedingly fertile, its principal products being figs, grapes, olive-oil, and pine timber. The island formerly contained nine cities, the chief being Mitylene.

Lesghians, a Tartar people of the Mohammedan religion, inhabiting the eastern Caucasus, and forming the chief portion of the inhabitants of Daghestan. They were among the most stubborn of the Caucasian peoples in their resistance to the Russians.

Les'ina, or LES'SINA, an island in the Adriatic, on the coast of Dalmatia, consist-

LESLIE.

ing of a long and narrow strip, stretching east to west for 40 miles, with a breadth of 2 to 6 miles, and presenting a continuous chain of hills, which, on the coast, form lofty and precipitous cliffs. Wine, olive-oil, and fruit are produced. The principal town, bearing same name, is on the south-west coast, and has a good natural harbour. Pop. 15,000.

Leslie, ALEXANDER, Earl of Leven, Scottish general, born about the end of the 16th century, went abroad, and rose to be field-marshal in the service of Gustavus Adolphus. Returning home in 1639 he was chosen general-in-chief of the Covenanters' army, and defeated the king's army at Newburn. In 1644 he went to the assistance of the English parliament, and led a division at Marston Moor. In 1646 Charles I. gave himself up to Leslie's army, then encamped at Newark. At the battle of Dunbar he served as a volunteer, and was soon afterwards thrown into the Tower by Cromwell, but soon liberated at the intercession of Christina of Sweden. He died at an advanced age in 1661. The peerage of Leven is now merged in that of Melville.

Leslie, CHARLES ROBERT, painter, born in London in 1794, was when very young taken by his parents to the United States, where he was apprenticed to a bookseller in Philadelphia. Having shown artistic ability he was sent to England, and became a pupil at the Royal Academy about 1813. Among his most successful early pictures were *Anne Page and Slender* (1819); *Sir Roger de Coverley going to Church* (1820); and *Mayday in the reign of Queen Elizabeth*. In 1824 he produced *Sancho Panza and the Duchess*, the first of his pictures from *Don Quixote*—a work which furnished him with some of his happiest subjects. Another scene from the *Spectator*, *Sir Roger de Coverley having his Fortune told by Gipsies*, was exhibited in 1829; *Uncle Toby and the Widow Wadman*, from *Tristram Shandy*, in 1831. Other important works were *Lady Jane Grey's Reluctance to accept the Crown* (1827); *Charles II. and Lady Bellenden Breakfasting in the Tower of Tillietudlem*, from *Old Mortality* (1836); *The Queen receiving the Sacrament at her Coronation* (1838); *Reading the Will*, from *Roderick Random* (1848); and *The Christening of the Princess Royal*, which three last are all well known by engravings. He was elected an associate of the Academy in 1821, an academician in 1826. From

1848 to 1851 he was professor of painting at the Academy. He died 1859. Leslie is distinguished for the delineation of character and expression, and for excellence in composition rather than for his colouring.

Leslie, DAVID, LORD NEWARK, a Scottish general and Presbyterian leader, born in Fifeshire in the early part of the 17th century. He served for some time under Gustavus Adolphus, king of Sweden, but returned to Scotland about the commencement of the civil wars, and in 1644 accompanied the Earl of Leven with the Scottish force sent to assist the parliament. His Scottish horse supported Cromwell's decisive charge at Marston Moor. Leslie was then recalled to check the successes of Montrose in the north, and routed him at Philiphaugh, near Selkirk. With the change in Scottish politics the Scottish army returned home, and Leslie was employed for some time in putting down insurrection, chiefly in the north and west among the Highlanders. When, however, the Scottish parliament took up arms on behalf of Charles II., Leslie was appointed commander-in-chief, and proved himself no unworthy opponent of Cromwell, but was finally defeated at Dunbar in 1650. He afterwards retreated to Stirling, where he was joined by Charles II., who assumed the command of the army. After the battle of Worcester Leslie was captured in Yorkshire, and imprisoned in the Tower till the Restoration. In 1661 he was rewarded for his services to the royal cause with the title of Lord Newark, and a pension of £500. He died in 1682.

Leslie, JOHN, Bishop of Ross, prelate and diplomatist, born in 1526 or 1527, studied at Aberdeen, Toulouse, Poitiers, and Paris. He escorted Queen Mary from France in 1561, and was always one of her most active friends. For his intrigues on her behalf he was imprisoned in the Tower, and on his liberation went to France, where in 1593 he was made Bishop of Coutances. He died in a monastery near Brussels in 1596. His works include a work *De Origine, Moribus, et Rebus Gestis Scotorum* (1578); and a *History of Scotland* from 1436 to 1561.

Leslie, SIR JOHN, Scottish physicist and mathematician, born at Largo, Fife, in 1766. He studied at the University of St. Andrews, and then at Edinburgh. After a short stay in America he returned to London, where he commenced his translation of Buffon's *Natural History of Birds*, published in 1793. He invented the differ-

ential thermometer about the year 1800, and four years later published his *Essay on the Nature and Propagation of Heat*. In 1805 he was elected to the chair of mathematics in the University of Edinburgh, a post which in 1819 he exchanged for the professorship of natural philosophy. Through one of his contrivances, his hygrometer, he arrived in 1810 at the discovery of a process of artificial congelation, which enabled him to freeze mercury. In 1809 he published his *Elements of Geometry*; in 1813 an *Account of Experiments and Instruments depending on the Relation of Air to Heat and Moisture*; in 1817 his *Philosophy of Arithmetic*; in 1821 his *Geometrical Analysis and Geometry of Curve Lines*; in 1822 a volume of *Elements of Natural Philosophy*; and in 1828 his *Rudiments of Geometry*. Besides these works he contributed largely to the *Edinburgh Review*, the *Encyclopædia Britannica*, &c. He died in 1832, having been knighted not long before.

Lesseps, FERDINAND, VICOMTE DE, French diplomatist and engineer, born in 1805. After holding several consular and diplomatic posts he retired from the government service, and in 1854 went to Egypt, and proposed to the viceroy the cutting of a canal across the Isthmus of Suez. This great work was successfully completed in 1859-69, under his supervision, and brought him high honors. Among other grand schemes proposed by him was the unfortunate Panamá canal (which see), in the management of the construction of which his reputation suffered sadly.

Lessing, GOTTHOLD EPHRAIM, German critic, dramatist, and scholar, born 1729 at Kamentz, in Upper Lusatia. He entered the University of Leipzig in 1746 to study theology, but his love of the drama and his intimacy with Schlegel, Mylius, Weisse, and other young men of literary tastes, led him to abandon this intention. After a short stay in Wittenberg he went, in 1748, with Mylius to Berlin, where he wrote for magazines and booksellers. He also undertook, with Mylius, in 1750, a publication entitled *Beiträge zur Historie und Aufnahme des Theaters* (Contributions to the History and Improvement of the Theatre); published some poems under the title of *Kleinigkeiten* (Trifles); translated a work of the Spanish philosopher Huarte; and wrote some articles in *Voss's Gazette*. He entered at this time into friendly relations with Moses Mendelssohn and the bookseller Nicolai, in conjunc-

tion with whom he established the critical journal, *Briefe die neueste Literatur betreffen* (Letters on the Newest Literature). In 1755 appeared Miss Sara Sampson, a tragedy dealing with English life. In 1760 Lessing became secretary to General Tauenzien in Breslau for five years, when he returned to Berlin and published the *Laokoon oder über die Grenzen der Malerei und Poesie* (Laocoon, or on the Limits of Painting and Poetry), and his comedy *Minna von Barnhelm*. About 1767 he became director of the National Theatre at Hamburg. While here he wrote his *Dramaturgie*. His criticisms made him enemies, and having been compelled to quit Hamburg, the Duke of Brunswick appointed him his librarian at Wolfenbüttel. In 1775 he went to Vienna, and accompanied Prince Leopold of Brunswick to Italy. He married in 1776, but his wife died in little more than a year. At this period he was involved in fierce theological disputes, which his philosophical drama *Nathan der Weise* (1779) did nothing to allay. Besides those mentioned, he wrote another drama, *Emilia Galotti* (1772). He died at Brunswick in 1781.

Lessons, the portions of Scripture read in church for the instruction of the worshippers. In the Church of England service the lessons are so arranged that, with certain exceptions, the Old Testament may be read through once, and the New Testament three times, at morning and evening prayer, in the course of a year.

Lestrangle, SIR ROGER, political controversialist, journalist, and translator, born at Hunstanton Hall, Norfolk, in 1616. In 1629 he attended Charles I. in his expedition into Scotland. In 1644 he formed a plan for surprising Lynn, but was seized and condemned as a spy. He was, however, respited from time to time until he had lain in prison four years, when he made his escape to the Continent. In 1653 he returned to England. He was licenser of the press from the Restoration until the close of the reign of James II., and himself edited the *Public Intelligencer* in 1663, the *London Gazette* in 1665, and the *Observator* in 1679, the latter existing till 1687. He died in 1704. He was the author of a great number of coarse and virulent political tracts, and translated Josephus, Cicero's *Offices*, Seneca's *Morals*, Quevedo's *Visions*, &c.

Lestris, the genus of birds to which belong the arctic gull and the skua gull, the most formidable of all the gull kind.

Lesueur (lè-sù-eur), EUSTACHE, French painter, born in 1617; studied under Simon Vouet. He married in 1644, and was compelled for a living to execute vignettes and frontispieces for books. His first works are in the style of his master, and quite distinct from his subsequent ones. His great work was the series of paintings which he executed for the Carthusian monastery in Paris in 1645-48, delineating in twenty-two pictures the principal scenes in the life of St. Bruno. In 1650 he painted for the corporation of goldsmiths the Preaching of the Apostle Paul at Ephesus. All of these are large paintings, and are now in the Louvre. Among the most distinguished of his later works are some mythological scenes. He died in 1655. His works are distinguished for grace rather than power, and are inferior in respect of colour.

Lesueur, JEAN FRANÇOIS, a French musical composer, a descendant of the painter Lesueur; born in 1760. In 1786 he was appointed chapel-master at Nôtre Dame, but his first opera proving successful, he resigned this post, and for some time devoted himself to operatic work. His chief operas were *La Caverne* (1792), *Paul et Virginie* (1794), *Télémaque* (1796), *Les Bardes* (1804), and *La Mort d'Adam* (1809). He was made professor of music in the National Institute, and though afterwards displaced by intrigue, was again restored by Bonaparte. In 1814 he was appointed composer to the king; and in 1817 professor of composition to the Conservatoire. His sacred music consists of thirty-three masses, oratorios, and motets. He died in 1837.

Leth'argy, an unnatural tendency to sleep, closely connected with languor and debility, and much resembling apoplexy in character. It may arise from a plethoric habit, from deficient circulation in the brain, from nervous exhaustion of that organ, from a poisoned state of the blood, or from a suppression of urine. When it is the consequence of alcoholic intoxication, or of the action of narcotics, it should be treated as apoplexy.

Lethe (lê'thê; Greek, *lêthê*, forgetfulness), the River of Oblivion, one of the streams of the lower regions celebrated in ancient mythology, whose water had the power of making those who drank of it forget the whole of their former existence. Souls before passing into Elysium drank to forget their earthly sorrows; souls returning to the upper world drank to forget the pleasures of Elysium.

Lethington. See *Maitland, William*.

Leto. See *Latona*.

Letter of Attorney. See *Attorney*.

Letter of Credit. See *Credit*.

Letter of Marque. See *Marque*.

Letters. See *Alphabet, Consonant, Vowel, Writing, &c.*

Letters-patent, the name of an instrument, not sealed, granted by the government, conferring on a person or a public company special or peculiar privilege. Letters-patent are issued to protect new inventions, and from this is derived what is called patent-right. See *Patent*.

Letts, a Slavonic people closely akin to the Lithuanians, inhabiting a portion of Russia mainly comprised in Courland, Livonia, Vitebsk, and Kovno. Their language, along with the Lithuanian and Old Prussian (extinct), forms the Lettic or Lithuanian branch of the Indo-European family of tongues. The Letts number about 1,000,000.

Lettuce (*Lactuca sativa*), a smooth, herbaceous, annual plant, containing a milky juice, and in general use as a salad. The stem grows to the height of about 2 feet, and bears small pale-yellow flowers; the inferior leaves are sessile, and undulate on the margin. The young plant only is eaten, as the lettuce is narcotic and poisonous when in flower. A number of species are known from various parts of the globe. *Lactucarium*, or lettuce opium, the inspissated juice of the lettuce, is used medicinally as an anodyne.

Leuca'dia, or SANTA MAURA, one of the Ionian Islands, on the west coast of Greece, 18 to 20 miles long, and $7\frac{1}{2}$ to 10 miles wide. Its surface is mountainous and rugged. The eastern side is waste and barren, but the western and northern parts are very productive, yielding vines, olives, citrons, &c. The south-western extremity, now Cape Ducato (also known as the Leucadian Rock, or the Lover's Leap), is a white cliff rising to the height of at least 2000 feet. On its summit was a temple of Apollo, in whose honour a criminal was annually thrown from the rock into the sea as a sin-offering. Sappho, Artemisia, and other despairing lovers are said to have thrown themselves from it. Amaxichi is the chief town. Pop. of the island, 20,737.

Leuchtenberg (loih'ten-berh), in the middle ages an independent landgraviate of Germany, which, by the extinction of the male line, fell to Bavaria in 1646. From it

Eugène Beauharnais took the title of Duke of Leuchtenberg.

Leucip'pus, Greek philosopher, founder of the atomic school, lived 500 years B.C., and is said by some to have been a native of Abdera; by others, of Elis or the Island of Melos. His instructor was Zeno the Eleatic, or according to others, Parmenides, and he himself was the teacher of Democritus.

Leucis'cus, the genus of fishes which contains the roach, dace, and bleak.

Leucocythæ'mia, LEUCOCYTHEMIA, in medicine, a disease in which the blood presents a great increase of the white corpuscles, the spleen and lymphatic glands being at the same time enlarged.

Leuco'jum, LEUCOJUM, a genus of bulbous plants, natural order Amaryllidaceæ. They are very like snowdrops, but the six perianth-segments are nearly equal. No varieties have been developed from this favourite plant by cultivation.

Leuco'ma, a white opacity of the cornea of the eye, the result of acute inflammation. Called also *Albugo*.

Leucopathy. See *Albino*.

Leucorrhœ'a, in medicine, a morbid discharge of a white, yellowish, or greenish mucus from the female genital organs.

Leuctra, a village in Bœotia, on the road from Thespiæ to Plataea, famous for the victory of the Theban Epaminondas over the Spartan king Cleombrotus, which put an end to the Spartan domination in Greece (371 B.C.).

Leuk (loik), a town of Switzerland, canton of Valais, on the right bank of the Rhone, 15 miles E.N.E. of Sion. About 5 miles to the north are the celebrated thermal saline baths of Leuk (Leukerbad), 4500 feet above the sea, which annually attract large numbers of visitors, chiefly Swiss and French. They are used chiefly for cutaneous diseases.

Leuthen (loi'ten), a village of Prussian Silesia, 9 miles from Breslau, where Frederick the Great defeated the Austrians in 1757.

Leuwenhoek. See *Leeuwenhoek*.

Levaillant (lè-vā-yān), FRANÇOIS, a French traveller, born in 1753. He made two expeditions into the interior of Africa, his accounts of which were published in 1790 and 1796. He died in 1824. Besides his books of travel he left some works on natural history, of which the most important are the *Histoire Naturelle des Oiseaux d'Afrique* (1798-1812), and the *Histoire Naturelle des Perroquets* (1801-5).

Levant', a term applied in the widest

sense to all the regions eastward from Italy as far as the Euphrates and the Nile, and in a more contracted sense to the Asiatic coasts of the Mediterranean and the adjacent countries from Constantinople to Alexandria in Egypt.

Leva'ri-facias, a writ of execution issued at common law.

Lev'ee, a morning reception held by a prince or great personage. The term is chiefly applied in Britain to the stated public occasions on which the sovereign receives visits from such persons as are entitled by rank or fortune to the honour. At a *drawing-room* gentlemen alone appear (with the exception of the chief ladies of the court), but at a *levee* both gentlemen and ladies are admitted. In the United States the term *levee* is applied to an official reception, at any hour of the day or evening.

Levee (Fr. *levée*), in America, an embankment on the margin of a river, to confine it within its natural channel, such as may be seen on the banks of the lower Mississippi.

Level, an instrument by which to find or draw a straight line parallel to the plane of the horizon, and by this means to determine the true level or the difference of ascent or descent between several places, for various purposes in architecture, agriculture, engineering, hydraulics, surveying, &c. There is a great variety of instruments for this purpose, differently constructed and of different materials, according to the particular purposes to which they are applied, as the carpenter's level, mason's level, gunner's level, balance level, water level, mercurial level, spirit level, surveying level, &c. All such instruments, however, may be reduced to three classes:—(1) Those in which the vertical line is determined by a suspended plumb line or balance weight, and the horizontal indicated by a line perpendicular to it. Such are the carpenter's and mason's levels. (2) Those which determine a horizontal line by the surface of a fluid at rest, as water and mercurial levels. (3) Those which point out the direction of a horizontal line by a bubble of air floating in a fluid contained in a glass tube. Such are spirit-levels, which are by far the most convenient and accurate. All levels depend on the same principle, namely, the action of terrestrial gravity.

Levellers, a name more particularly given to a party which arose in the army of the Long Parliament about the year 1647, and was put down by Fairfax. They aimed at

the establishment of an equality in titles and estates throughout the kingdom.

Levelling, the art or operation of ascertaining the different elevations of objects on the surface of the earth, or of finding how much any assigned point included in a survey is higher or lower than another assigned point. It is a branch of surveying of great importance in making roads, determining the proper lines for railways, conducting water, draining low grounds, rendering rivers navigable, forming canals, and the like. In ordinary cases of levelling (for example, for canals, railways, &c.) the instruments commonly employed are a spirit-level with a telescope attached to it, and a stand for mounting them on, and a pair of levelling staves. A *levelling staff* is an instrument used in conjunction with a spirit-level and telescope. It is variously constructed, but consists essentially of a graduated pole with a *vane* sliding upon it so as to mark the height at any particular distance above the ground. In levelling two of them are used together, and being set up at any required distance the surveyor, by means of a telescope placed between them perfectly horizontally, is enabled to compare the relative heights of the two places.

Leven, EARL OF. See *Leslie, Alexander*.

Le'ven, LOCH, a lake of Scotland, about 10 miles in circumference, in the county of Kinross. It contains four islands, on one of which was formerly a priory, and on another stand the remains of the castle of Loch Leven, once a royal residence, granted by Robert III. to a Douglas. Mary Queen of Scots was confined in this castle after her capture by the confederate lords in 1567, but succeeded in escaping by the aid of George Douglas, her keeper's brother, on the 2d May, 1568.

Lever, a bar of metal, wood, or other substance turning on a support called the *fulcrum* or *prop*, and used to overcome a certain resistance (called the *weight*) encountered at one part of the bar by means of a force (called the *power*) applied at another part. It is one of the mechanical powers, and is of three kinds, viz.: (1) When the fulcrum is between the weight and the power, as in the hand-spike, crow-bar, &c. In this case the parts of the lever on each side of the fulcrum are called the arms, and these arms may either be equal as in the balance, or unequal as in the steelyard. (2) When the weight is between the power and the fulcrum, as in rowing a boat, where the

fulcrum is the water. (3) When the power is between the weight and the fulcrum, as in raising a ladder from the ground by applying the hands to one of the lower rounds, the fulcrum in this case being the foot of the ladder. The law which holds in the lever is: the power multiplied by its arm is equal to the weight multiplied by its arm. It is evident that when the power has a very large arm, and the weight a very small one, a very small power will overcome a great resistance. In the lever, as in all machines when a small force overcomes a great one, the small force acts through a much greater distance than that through which the great force is overcome, or as is sometimes said, 'What is gained in power is lost in time.'

Le'ver, CHARLES JAMES, an Irish novelist, born at Dublin in 1806. He graduated in arts at Trinity College, Dublin, in 1827, and in medicine in 1831, taking his doctor's degree a little later at Göttingen. He then returned to Ireland to practise. In March, 1834, he contributed his first paper to the newly-started Dublin University Magazine, of which he became editor in 1842. The first chapter of *Harry Lorrequer* appeared in that magazine in 1837. Meanwhile he was attached as physician to the British legation at Brussels, where he practised for three years. During his three years' editorship of the Dublin University Magazine he resided in the neighbourhood of the Irish capital, but after his resignation he took up residence on the Continent, mainly occupying himself with fiction. His *Charles O'Malley*, *Tom Burke*, *Jack Hinton*, &c., constituted a literature entirely *sui generis*. His later novels were more thoughtful and artistic. He obtained a diplomatic post at Florence about 1845, was appointed vice-consul at Spezzia in 1858, and in 1867 at Trieste, where he died in 1872.

Leverrier, URBAIN JEAN JOSEPH, French astronomer, born at Saint-Lô (Manche) 1811, died at Paris 1877. He devoted himself at first to chemical research, but some memoirs on the stability of the solar system drew on him the attention of Arago, who induced him to persevere with astronomical studies. His observations on the transit of Mercury in 1845 procured him admission into the Academy of Sciences. His great work was his investigation of the irregularities in the movements of the planet Uranus, carried on simultaneously but independently with those in the same line by John Couch Adams,

which led to the discovery of the planet Neptune. He entered political life in 1849, and was made a senator by Napoleon III. He succeeded Arago as director of the observatory, but his arrogance and violence of temper made his tenure of the office a failure. His tables of suns and planets are in general use among astronomers.

Levi, the third son of Jacob and Leah. The chief incident recorded of him, as apart from his brethren, is the part which he played in the massacre of the Shechemites. Three sons went down with him to Egypt—Gershon, Kohath, and Merari (Gen. xlv. 2). Moses and Aaron were of this tribe.

Levi'athan, a form of the Hebrew word *livyathan*, meaning a long-jointed monster, applied in Job xli. and elsewhere in Scripture to an aquatic animal variously held to be the crocodile, the whale, or some species of serpent.

Lev'irate, **LEV'IRATION** (Lat. *levir*, a husband's brother), the custom among the Jews of a man's marrying the widow of a brother who died without issue. The same custom or law prevails in some parts of India.

Levis, a town of Canada, on the south bank of the St. Lawrence opposite Quebec, with which there is ferry communication. It carries on a large trade by river and rail. Pop. 1891, 7301.

Le'vites, the name generally employed to designate not the whole Jewish tribe that traced its descent from Levi, but a division within the tribe itself, in contradistinction to the priests, who are otherwise called the 'sons of Aaron.' They were the ministers of worship, specially singled out for the service of the sanctuary. Together with the priests they formed the sacerdotal tribe. A permanent organization was made for their maintenance. In place of territorial possessions they were to receive tithes of the produce of the land, and in their turn to offer a tithe to the priests. After the settlement in Canaan, to the tribe of Levi were assigned forty-eight cities, six of which were cities of refuge, thirteen of the total number being set apart for the priests. To the Levites was to belong the office of preserving, transcribing, and interpreting the law, and they were to read it every seventh year at the feast of tabernacles. Their position was much changed by the revolt of the ten tribes, and they are seldom mentioned in the New Testament, where they appear as the types of formal, heartless worship.

Levit'icus, the name of the third book of the Pentateuch, so called from the first word of its contents. By the later Jews it was called the 'Law of the Priests,' and sometimes the 'Law of Offerings.' It consists of seven principal sections, but it may be generally described as containing the laws and ordinances relating to Levites, priests, and sacrifices. The integrity of the book is very generally admitted, the Elohist, or author of the original document (see *Elohim*), being credited with having written nearly the whole of it, and the rest being considered originally Elohist.

Levkosi'a. See *Nicosia*.

Levoglu'cose, **LÆVOGLUCOSE**, a sugar isomeric with dextroglucose, but distinguished from it by turning the plane of polarization to the left, and always occurring along with it in honey, in many fruits, and in other sacchariferous vegetable organs.

Lewes (lö'es), a municipal borough of England, in Sussex, on the Ouse, 7 miles north-east by east of Brighton. It is built on an acclivity, and is a place of great antiquity, containing the ruins of many ecclesiastical buildings. The chief manufacture is agricultural implements. In its vicinity, in 1264, the barons, under Simon de Montfort, defeated the royal army under Henry III. Pop. 1891, 10,997.

Lewes (lö'es), **GEORGE HENRY**, philosophical writer and contributor to most departments of literature, born in London in 1817. He was in turn a clerk, a medical student, and a student of philosophy in Germany, from which he returned in 1840 to devote himself to general literature. His first important work was his *Biographical History of Philosophy from Thales to Comte*, originally published in 1845, and subsequently much extended and altered—a work written more or less from a Positivist point of view, and sufficiently proving his ability as a thinker and writer. From 1849 to 1854 he was literary editor of the *Leader*, during that time publishing his *Life of Robespierre* (1850) and a compendium of Comte's *Philosophy of the Sciences* (1853). His *Life of Goethe*, which won him a European reputation, was published in 1855. From 1854 he was largely engaged in physiological investigations with special reference to philosophical problems. To this period belong his *Sea-side Studies* (1858), *Physiology of Common Life* (1860), and *Studies in Animal Life* (1861), besides papers contributed to the *British Association on the spinal cord and on the nervous*

system. In 1864 he published a study on Aristotle, and in 1865 founded the Fortnightly Review, but was compelled by ill-health to retire a year later. The chief work of his life, aiming at the systematic development of his philosophical views, is entitled *Problems of Life and Mind* (1873–77). He died in 1878. Besides the works already mentioned he wrote *The Spanish drama: Lope de Vega and Calderon* (1846); two novels, *Ranthorpe* (1847) and *Rose, Blanche, and Violet* (1848); and prepared various plays for the stage under the pseudonym of Slingsby Laurence. Few writers have done as uniformly good work over so wide an area. His relations with George Eliot are well known. See *Eliot, George*.

Lewis (lō'is), the largest of the Hebrides, separated from the mainland of Scotland by a sea 30 to 35 miles wide, called the Minch. The south portion of the island, called Harris, is in Inverness-shire, the northern and largest portion being in Ross-shire. The entire length of the island, south-west to north-east, is 52 miles; breadth, varying from 30 miles to 5 and 10 miles; area, nearly 700,000 acres. It is of irregular form, is deeply indented all round by bays and inlets, and though in general flat, contains some considerable elevations, two of which rise to 2700 feet above sea-level. In the interior peat-bogs occur, with numerous small lakes and short rivers. Both the inland and coast fishing is good. Up to 1844, when the greater part of the land changed proprietors, agriculture as well as other industries was in a very backward condition; but considerable improvements have been since made, though the fishery still waits a satisfactory development. The Gaelic language is almost universally spoken. The principal town is Stornoway. Pop. of entire island, 28,339.

Lewis, SIR GEORGE CORNEWALL, BART., an English statesman and historian, born 1806, died 1863. He was educated at Eton and Christ Church, Oxford, and was called to the bar at the Middle Temple, but never practised. In 1839 he succeeded his father as poor-law commissioner, holding that office till 1847, when he became secretary to the board of control. In 1844 he married a sister of the Earl of Clarendon, and in 1847 was elected M.P. for Herefordshire, for which he sat till 1852. From 1852 to 1855 he was the editor of the *Edinburgh Review*. In 1855 he succeeded his father in the representation of Radnorshire,

and was immediately appointed chancellor of the exchequer by Lord Palmerston. In 1859 he became secretary of state for the home department, and secretary of state for war in 1861. His chief works were: *Remarks on the Use and Abuse of Some Political Terms* (1832); *Essay on the Origin and Formation of the Romance Languages* (1835); *Essay on the Influence of Authority in Matters of Opinion* (1850); *Inquiry into the Credibility of Early Roman History* (1855); *Astronomy of the Ancients* (1861); and *A Treatise on the Methods of Observation and Reasoning in Politics*.

Lewis, MATTHEW GREGORY, an English romance writer and dramatic author, born 1775. He was educated at Westminster, and then travelled for some time in Germany, the romantic literature of which gave to him that passion for the marvellous and terrific which chiefly marks his writings. His earliest and most celebrated work was *Ambrosio* or *The Monk* (1794), a romance, the first edition of which was suppressed for its licentiousness. Other works were: *Feudal Tyrants*, a romance; *Romantic Tales*; *Tales of Wonder*, in verse; *Tales of Terror*; *the Castle Spectre*, a romantic drama, 1798; *Adelmorn the Outlaw*, 1800; *Alphonso, King of Castile*, 1801; a volume of miscellaneous poetry; *the Bravo of Venice* (a romance translated from the German, 1804), and *Timour the Tartar*, a melodrama (1812). Mr. Lewis had for some years a seat in parliament. He died at sea in 1818, while on the voyage home from a visit to his West Indian possessions.

Lewis River or **SNAKE RIVER**, a river of North America, which rises in the Rocky Mountains, and runs north-west into the Columbia, 413 miles from its mouth; length, about 900 miles. Its course lies partly in Idaho, partly between Idaho and Oregon, and partly in Washington.

Lewiston, a city of Maine, U. States, on the Androscoggin River, which here has a fall of 50 feet, the water power being utilized by several manufactories (chiefly of cotton and woollen goods) and extensive saw-mills. Pop. 1890, 21,701.

Lexicon. See *Dictionary*.

Lexington, a city of the U. States, in Kentucky, 23 miles E.S.E. of Frankfort. It is the oldest town in the state (having been founded in 1775), and was once the capital. It is more a place of fashionable residence than of trade. There is here the Kentucky State university. Pop. 1890, 21,567.

Lexington, a small town of the U. States, in Massachusetts, where the first American blood was shed in armed resistance to the mother country. On April 19, 1775, the advance of a detachment of British troops, sent from Boston to seize some provincial stores at Concord, was opposed by the Lexington militia (70 men), who were dispersed with a loss of eight killed and three wounded. Pop. 1890, 3197.

Ley. See *Lye*.

Leyden (Lat. *Lugdunum Batavorum*), a town in Holland, 22 miles south-west of Amsterdam, on both sides of the Old Rhine. Leyden is encompassed by wind-mills, and surrounded by country-seats, pleasure-grounds, gardens, and fertile meadows. The streets are straight and broad, the Broad Street (*Brede-sstraat*) being esteemed one of the finest in Europe. In it is situated the town-hall (*Stadhuis*), a picturesque old building, with some important paintings. None of the churches are very remarkable. The most important educational institution is the university, formerly one of the most famed in Europe. It is attended on the average by about 700 students, nearly one-half studying law. Leyden has cloth and other manufactures. The population, about 100,000 in the 17th century, was, in 1892, 43,958.

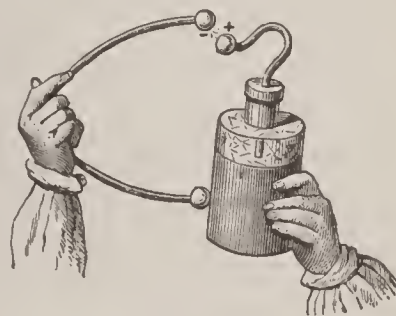
Leyden, JAN, or JOHN OF. See article *Anabaptists*.

Leyden, JOHN, a Scottish poet and orientalist, born at Denholm, Roxburghshire, 1775, died at Batavia 1811. Being intended for the Scottish church, he was sent to the University of Edinburgh in 1790. Here his studies included not only theology and the learned languages, but also French, Spanish, Italian, German, Icelandic, Arabic, and Persian. His great gifts secured him access to the best literary circles of Edinburgh. He published translations and original poems in the *Edinburgh Magazine*; contributed to *Lewis' Tales of Wonder*; assisted Sir Walter Scott in procuring materials for his *Minstrelsy of the Scottish Border*, and wrote a *History of African Discoveries*. In 1798 he was ordained a Presbyterian minister, but the ministry not being to his taste, he accepted service as assistant-surgeon under the East India Company, a post demanding a surgical degree, which he obtained after six months study. In India he continued his favourite philological studies, became professor of Hindustani at Bengal College, and shortly after a judge at Calcutta; but fell a victim to cli-

mate and over-study, and died of fever during an expedition to Java with Lord Minto.

Leyden, LUKE OF. See *Luke of Leyden*.

Leyden-jar, an early form of electric accumulator, introduced to the scientific world by Muschenbroek of Leyden in 1746, hence its name. It consists of a glass phial or jar coated inside and outside, usually with tin-foil, to within a third of the top. A metallic rod, having a knob at the top, is fixed into the mouth of the jar, and is made to communicate with the inside coating, and when the jar is to be charged the knob of this rod is applied to the prime conductor of an electric machine.



Leyden-jar.

As the electric fluid passes to the inside of the jar an equal quantity passes from the outside, so that the two coatings are brought into opposite states, the inside being positive and the outside negative. The jar is discharged by establishing a communication between the outside coating and the knob. When a number of jars are placed in a box lined with tin-foil connected with the earth, their knobs being joined together, they form a *battery*; a quantity of electricity equal to the sum of the charges which would be received by each jar can be collected in such a battery, capable of melting fine metallic wires, puncturing plates of glass or card-board, killing animals, rupturing bad conductors, &c.

Leze Majesty, any crime against the sovereign authority of a state; treason.

Lhasa. See *Lassa*.

L'Hôpital (lō-pi-tāl), MICHEL DE, an eminent French chancellor and author; born about 1504, died 1573. Admitted to the bar in Paris, he rapidly rose in his profession until he became superintendent of the royal finances in 1554, a position in which his services were of the highest value. In 1560 he was appointed to the chancellorship of France. The country suffered severely at this time from the struggles between Catholics and Protestants. L'Hôpital rendered great service in mediating between the rival factions, and was the principal author of the Edict of Tolerance of 1562. When violence was resolved on for the extermination of the reformed religion he found it necessary to

resign. The atrocities of St. Bartholomew's day in 1572 were a great shock to him, and he only survived that event by a few months.

Li, LE, or CASH, the only copper coin of China, with a square hole in the middle, and an inscription on one side. Ten lis make one candareen, 100 a mace, 1000 a liang or tael, the only Chinese silver coin, average value about 5s. Li is also a Chinese measure of length equal to about $\frac{1}{3}$ of an English mile.

Liability, LIMITED. See *Joint-stock Companies*.

Lia-fail, or STONE OF DESTINY, a broad gray stone on which the kings of Scotland were crowned in the Abbey Church of Scone. In 1296 Edward I. carried it to England, and it still remains under the coronation chair in Westminster Abbey. Tradition has it that it is the very stone upon which the patriarch Jacob laid his head in the plains of Luz.

Lian'as, a term applied to those climbing and twining plants found in profusion in tropical climates, where in many instances they overtop the heads of the tallest trees, and intertwine the entire forest by their cable-like shoots, forming an impenetrable network, which it is necessary to break through with the hatchet. Vanilla, sarsaparilla, and other medicinal plants are true lianas.

Liaotung. See *Leao-tong*.

Lias, in geology, the name given to that series of strata, consisting principally of thin layers of limestone imbedded in thick masses of blue argillaceous clay, lying at the base of the Oolitic or Jurassic series, and above the Triassic or New Red Sandstone. The formation is highly fossiliferous, ammonites being found in such quantities and varieties as to be called into use in the classification of the different beds. Gryphites and belemnites are also very common molluscs. Fish remains are frequent; but of all its fossil remains by far the most important are those of the great reptiles, of which the ichthyosaurus, plesiosaurus, and enaliosaurus are representatives. Numerous remains of plants occur in the lias. See *Geology*.

Libanius, a distinguished Greek sophist and rhetorician, born at Antioch about A.D. 314, died at the same place about 395. He studied at Athens, and taught with great success at Constantinople and at Nicomedia. He used his eloquence in obstructing the spread of Christian ideas, and in the defence of paganism. St. Basil and St. Chrysostom were warmly attached to him. His letters have, besides great literary merit, much

historic value, as they were addressed to the most eminent men of his time.

Lib'anus, MOUNT. See *Lebanon*.

Libau (lē'bou), an important seaport of Russia, government of Courland, at the mouth of the lake of the same name, on the Baltic. Its trade in corn, flax, hemp, &c., is considerable. Pop. 27,418.

Libel, in law, the act of publishing malicious statements with intent to expose persons or institutions to public hatred, contempt, or ridicule, and thereby provoking them to anger, causing a breach of the peace, injury to reputation, business, &c. The difference between libel and slander is, that in the former case the defamation must have been effected in writing, printing, or some other visible manner, while in the latter the offence is committed verbally. Publication is held to have taken place if the libel is seen but by one person other than the person libelled. The law distinguishes defamatory, seditious, and obscene libel. A defamatory libel may result in civil and criminal proceedings against both the publisher and the writer, but to come under this category it is essential that the libel be false, malicious (the law presuming malice in every injury done intentionally and without justification), have a tendency to provoke hatred or contempt, and that it be non-privileged. In criminal law it is a misdemeanour to publish or threaten to publish a libel; or as a means of extortion, to offer to abstain from or to prevent others from publishing a libel. In the United States the punishment for this offence is imprisonment fixed by statute in the different States. A seditious libel is one directed against the head of the state, the legislature, the courts of justice, &c., and its publication constitutes also a misdemeanour. The term obscene libel comprises any obscene publication, and the publisher thereof is liable to imprisonment with hard labour. If the charges contained in the libel are true a civil action cannot be maintained, but the truth of the libellous matter is no defence at common law; at the same time it generally secures the defendant the merciful consideration of the court. In a civil action the plaintiff recovers damages, the amount of which is settled by the jury; upon an indictment, the jury has merely to acquit the defendant or to find him guilty, after which the court passes judgment, and awards punishment, generally fine or imprisonment, or both. Recent legislation

and decisions in this branch of law in Great Britain and the United States (the American laws differ but little from those of Great Britain) have a tendency to limit liability for action to purely false, scandalous, and malicious libels. Truth, if published with good motives and for justifiable ends, is now admitted as a good defence, and even motive alone, though the statements may prove untrue.

Libel, in nearly all ecclesiastical and admiralty courts, is the name given to the formal written statement of the complainant's ground of complaint, in the civil litigation, against the defendant. In Scotch law, an indictment on which either a civil action or criminal prosecution takes place.

Libel'lula. See *Dragon-fly*.

Liber. See *Bark*.

Liberal Arts. See *Arts*.

Liberal Party, in politics, the party which claims to be distinctively that of reform and progress. The main objects of liberal agitation and legislation are to vest increased power in the people, and to extend privileges to the masses, which were formerly monopolized by the favoured classes. Most European countries have a powerful liberal party, and liberalism is rapidly spreading in Europe, particularly in Great Britain, Germany, Italy, Spain, Holland, Norway and Sweden. In Great Britain Liberal and Conservative ministries follow each other at irregular intervals, and on the whole the system works well. In proportion to population, the Liberal party is strongest in Scotland and Wales. The greatest of modern Liberal leaders is the Right Hon. W. E. Gladstone, but his introduction, in 1886, of the Irish Home Rule and Land Purchase Bills alienated some of his most able supporters, and led to the formation of the Liberal Unionist Party. See next article.

Liberal Unionist Party, in British politics, a party formed in the summer of 1886 by Liberals (under the leadership of the Marquis of Hartington), who objected to Mr. Gladstone's Irish Government and Land Purchase Bills, as being destructive of the integrity of the United Kingdom, and dangerous to the empire. They gained their immediate object by coalescing with the Conservatives, and in the election which followed the defeat of the Gladstonian ministry they succeeded in returning some 80 members to parliament. They have since acted with the Conservatives.

Libe'ria, a negro republic on the west

coast of Africa, founded in 1820 by liberated American slaves under the auspices of the American Colonization Society, and recognized as an independent state in 1847. It lies between the rivers San Pedro and Manna, has 500 miles of seaboard, and extends some 100 miles inland; area 14,000 to 15,000 square miles. The soil is fertile, well watered, and highly adapted to the cultivation of all tropical products. The chief crop is coffee, increasing quantities of which are grown from year to year and exported, other exports being palm-oil, ground-nuts, caoutchouc, and ivory. The climate is very unhealthy for Europeans. British weights, measures, and moneys are mostly in use. The English language predominates among the governing class, Protestant churches and schools are amply provided, and civilization is making rapid strides among the natives. The population consists of some 20,000 immigrants from the United States and their descendants, and about 1,000,000 natives; Monrovia is the capital. The government of the republic is on the model of the United States.

Lib'ertines, or **LIBERTI'NI**, a sect of fanatics in the 16th century in Holland and Brabant, who maintained that nothing is sinful but to those who think it sinful, and that perfect innocence is to live without doubt. They advocated community of goods, &c. The name was also applied in England to the early Anabaptists about the middle of the 16th century.

Liberty, **CAP OF**, a cap used as a symbol of liberty. In ancient times Roman manumitted slaves put on what was termed the Phrygian cap, in token of their freedom. In modern times the name cap of liberty was given to a red cap worn by French and other revolutionaries.

Liberty of the Press. See *Press*.

Libi-Dibi. See *Divi-divi*.

Libourne (li-börn), a town of France, department Gironde, on the Dordogne, 17 miles N.N.E. Bordeaux. It is walled, built with great regularity, and has many elegant buildings. It has an important trade in wine, the famous St. Emilion being grown in the neighbourhood, and brandy. Pop. 16,393.

Li'bra, the seventh sign of the zodiac. At its first point the ecliptic crosses the equator to the southern hemisphere, and we have then the *autumnal equinox*.

Library, the name given to a collection of books, and to the building in which it is

located. Libraries existed in ancient Egypt and Assyria, and Pisistratus is credited with the honour of introducing a public library at Athens about B.C. 337. Cicero and various wealthy Romans made collections of books, and several Roman emperors established libraries, partly with books obtained as spoils of war. By far the most celebrated library of antiquity was the Alexandrian. (See *Alexandrian Library*.) In the West libraries of any note were founded in the second half of the 8th century by the encouragement of Charlemagne. In France one of the most celebrated was that in the abbey St. Germain des Prés, near Paris. In Germany the libraries of Fulda, Corvey, and in the 11th century that of Hirschau, were valuable. In Spain, in the 12th century, the Moors had seventy public libraries, of which that of Cordova contained 250,000 volumes. In Britain and Italy libraries were also founded with great zeal, particularly in the former country, by Richard Aungerville; in the latter by Petrarch, Boccaccio, and others. After the invention of the art of printing this was done more easily and at less expense. The principal libraries of modern times are the national library at Paris, with nearly 2,300,000 of books and 10,000 MSS., and the British Museum library, London, with over 1,500,000 books and 100,000 MSS. The central court library at Munich, the imperial library at St. Petersburg, and the royal library at Berlin have each over a million volumes and thousands of MSS. Other large and valuable libraries are the imperial library at Vienna; the royal libraries at Stuttgart, Dresden, and Copenhagen; the university libraries of Genoa, Prague, Göttingen, Upsal, Oxford, Cambridge, and Dublin; also the libraries of Moscow, Venice, Florence, Milan, Bologna, Naples, and the Advocates', Edinburgh. The Vatican library, Rome, and the Bodleian, Oxford, are particularly valuable in rare books and MSS. The spread of education, and the consequent growing taste for knowledge, has called into existence innumerable smaller libraries, ready of access, and providing such literature as the special class of readers demand. This public library system has naturally been most developed in highly-educated countries such as Germany, France, Great Britain, and the United States. The establishment of public libraries in Britain has been much fostered by the Public Libraries' Acts, which em-

power towns, local board districts, and parishes to establish libraries to be maintained by a rate not exceeding 1*d.* in the £. From 1850 to the end of 1887, 183 places had taken advantage of these acts. The French government has established over 25,000 popular libraries in connection with primary schools. The Bureau of Education of the United States records nearly 6000 libraries with over 20 million volumes. The public library of Boston has over half a million books, while the libraries of Harvard University, Cambridge, Yale College, New-haven, the Astor library, and Mercantile Library Association, New York, and the Congress library, Washington, possess each several hundred thousand volumes; the latter alone numbering 643,000, besides 200,000 pamphlets. In the United States there are now 1686 public libraries, with over 13,000,000 volumes. The Drexel Institute of Philadelphia is the most recent as it is the greatest endowment which includes a library as an important part of its splendid educational courses. Mr. Andrew Carnegie has given \$1,000,000 for the Pittsburg Library, \$1,000,000 for Pittsburg Art Gallery and Museum, \$300,000 for the Allegheny City Library, \$100,000 for the Carnegie Library at Braddock, \$40,000 for the Johnstown Library; besides benefactions for Edinburgh, Dunfermline, Ayr, and other Scotch towns.

Lica'ta. See *Alicata*.

License, in law, the grant of permission to do some lawful act, also the document conferring such authority. All civilized countries require that persons should not carry on certain trades or professions, or do certain acts, without previous grant of license, and such licenses may be imposed for the sake of regulating traffic or raising revenue. Most numerous are licenses issued to empower persons to sell certain articles. In Great Britain the articles not to be dealt in without a license include: beer, cider, wines and spirits, tobacco and snuff, patent medicines, gold and silver, game, sweets; besides these there are licenses for auctioneers, appraisers, armorial bearings, carriages, dogs, guns, hawkers and pedlars, male servants, pawnbrokers, &c. The total revenue derived from these licenses in Great Britain amounts to about £3,500,000, the bulk of this revenue being furnished by the beer and spirit licenses. Numerous acts have been passed for the regulation of the liquor traffic as carried on by license, one of the most im-

portant being that of 1872, which has been somewhat modified by subsequent amendments. There are now in force stringent provisions against adulteration; the illicit sale of liquor; against drunkenness and gambling; the harbouring of prostitutes; the treating and bribing of constables; the sale of liquor to children; &c. In Scotland legislation affecting licenses has been somewhat different from the English statutes. In England beer-houses are allowed to keep open for a certain time on Sunday, but in Scotland they are entirely closed on that day. The most important and best known of the Scotch acts is the one put in force in 1853, commonly known as the 'Forbes Mackenzie Act' (which see). The Early Closing Act (Scotland) of 1888 provides that licensed houses close at 10 p.m. instead of 11 p.m. as heretofore, a few of the larger towns excepted. Occasional licenses for fêtes, balls, &c., at which excisable liquors are sold, are granted, and licensed houses may for certain occasions obtain permission to keep open beyond the usual hours. The license laws of America vary in the different States. Some of the States have adopted Local Option, and several (notably Maine) have entirely prohibited the sale of intoxicants as a beverage; while others have imposed an almost restrictive license duty. In Canada an act for the licensing of places for the sale of liquor came into operation in 1884. By it boards of licensing commissioners are established all over the country, and the number of hotel and saloon licenses to be granted in any locality is determined by the population.

Licen'tiate, literally a person licensed. It may express that a person possesses certain medical or other qualifications. Thus there are licentiates of the Royal College of Surgeons, licentiates in dental surgery, &c. Among Presbyterians it is applied to a person authorized by a presbytery to preach, and who thus becomes eligible to a pastoral charge.

Lichen (lî'ken or lich'en), in medicine, a skin disease affecting adults. It consists of a number of pimples, red or white in colour, either clustered or disseminated over the surface of the skin, with or without fever, or derangement of the digestive organs, usually terminating in slight desquamation, and very liable to recur, though not contagious. There are several varieties of this eruption, but in the milder forms all that is necessary is to avoid excess, especially in

rich food and the use of stimulants, and to take a light diet, with diluent drinks, and a gentle laxative occasionally. Strong external applications should not be employed, but lotions of lime-water, or weak solutions of the bicarbonate of ammonia, afford relief. The prickly heat so well known to dwellers in tropical climates, is a species of lichen.

Lichens, a very extensive order of cryptogamic or flowerless plants. According to a modern theory lichens are not simple plants, but are fungi parasitic on algæ, the two being mutually dependent. They have neither stem nor leaves, but consist mainly of a *thallus* deriving its nourishment from the air. They are reproduced by spores contained in fruits called *apothecia*, which are regarded as the fungi of the particular lichen. They are common everywhere, commonly in the form of flat crusts, sometimes of foliaceous expansions, adhering to rocks, the trunks of trees, barren soil, &c. They are found flourishing to the very verge of perpetual snow, and one species, the reindeer-moss (*Cladonia rangiferina*), grows in the greatest profusion in the Arctic regions, where it forms the reindeer's chief sustenance. The Iceland-moss (*Cetraria Islandica*) is also abundant in the Arctic regions, and often affords aliment to the inhabitants. (See *Iceland-moss*.) Several other lichens afford dyes of various colours, these being chiefly obtained from rocks in the Azores and Canaries. Litmus is also obtained from a lichen. See *Archil*, *Litmus*.

Lichfield, an episcopal city of Staffordshire, England, 17 miles south-east of Stafford. The principal edifice is the cathedral, a large and handsome structure, partly in the early English, and partly in a more recent style, with a richly decorated west front, and three spires—two on the west, each 180, and one in the centre 280 feet high. The most distinguished native is Dr. Johnson, to whom a monument has been erected facing the house where he was born. The see of Lichfield was founded in 656. For parliamentary representation the city is now included in the Lichfield division of Staffordshire. Pop. 1891, 7864.

Lich-gate (literally 'corpse-gate'), in architecture, a sort of open shed or covered gateway at the entrance to a churchyard, beneath which the bearers of the coffin awaited the arrival of the priest, who there commenced to read the burial service, and thence walked before the mourners to the grave.

Lick, JAMES, philanthropist, was born in Fredericksburg, Pa., in 1796. In 1847 he settled in California, accumulating a large fortune. Besides other charitable bequests he donated \$540,000 for a school of mechanical arts, and \$700,000 to construct an observatory which was to contain an equatorial telescope, the largest in the world. The observatory is supplied with instruments of the most perfect kind, and in particular possesses a refracting telescope with an object-glass 36 inches in diameter.

Lictors, in Rome, were the public servants who attended upon the chief magistrates, consuls, prætors, &c., to clear the way for them, and cause due respect to be paid to them. They carried axes tied up in bundles of rods, called *fascæ*, as ensigns of office, and were selected from the lower class of free men. The number of lictors preceding the state dignitaries depended upon the rank of the latter.

Lieber, FRANCIS, a Germano-American writer, born at Berlin 1800, died at New York 1872. In youth he served as a volunteer, and fought at Ligny and Waterloo. On the termination of the war he again took up his literary studies, and in 1821 obtained his degree at Jena. Getting into trouble with government on account of his liberal opinions, he went to London in 1826, and the following year to America, where he edited the *Encyclopedia Americana*, based on the German *Conversations-Lexikon*. The South Carolina College, Columbia, elected him in 1835 professor of history and political economy, a post he held until 1856, when he accepted a similar appointment in Columbia College, New York. He has written many books and pamphlets on morals, education, and political economy, and some of them have been translated into French and German.

Liebig (lē'bih), JUSTUS, BARON VON, one of the most eminent of modern chemists, born at Darmstadt 1803, died at Munich 1873. At the age of sixteen he entered the University of Bonn, and afterwards that of Erlangen, where, in 1822, he gained the degree of Doctor of Philosophy (Physical and Mathematical Sciences). At the expense of the Grand Duke of Hesse he repaired to Paris to complete his studies. He first secured the attention of the chemical world in 1824 by reading a paper before the French Academy of Sciences on fulminic acid and the fulminates, the true composition of which were until then unknown. This also gained

him the favour of Humboldt, and through the latter's influence he was appointed extraordinary, and in 1825 ordinary professor of chemistry at the University of Giessen, a chair he held for 25 years. In 1850 he replaced Professor Gmelin at Heidelberg, and in 1852 he accepted the chemistry chair at Munich, with charge of the laboratory. The Munich Academy of Sciences elected him president in 1860. The results of Liebig's labours were generally given in the scientific reviews of the time, but chiefly in his own organ, *The Annalen der Pharmacie*, in the *Transactions of the Royal Society of London*, and the *Mémoires de l'Académie des Sciences*. Liebig is regarded as the founder of organic chemistry, owing to the many discoveries he made in this department. He did much to improve the methods of analysis; his *Chemistry of Food* has brought about a more rational mode of cooking and use of food; while agriculture owes much to his application of chemistry to soils and manures. The Grand Duke of Hesse created him an hereditary baron, and he received many honours from universities and learned societies of Europe and America.

Liechtenstein (lēh'ten-stīn), a small principality, practically a portion of the Austro-Hungarian monarchy, between Vorarlberg, Tyrol, and Switzerland; area, 68 sq. miles, pop. 9124. The surface has a fertile soil, yielding abundance of pasture, corn, wine, fruit, and flax. The chief place, Vaduz, has about 1000 inhabitants.

Liège (li-āzh; Flem. *Luik*; Germ. *Lüttich*), a town of Belgium, capital of the province of same name, 54 miles east by south of Brussels. It is picturesquely situated on both sides of the Meuse, the larger part rising on heights above the river on the left bank, opposite the influx of the Ourthe. It dates from the 6th century, was once strongly fortified, and still has a citadel and another fort. Liège is the principal manufacturing town of Belgium, its foundries, firearm, metal, and tool manufactures being very extensive; besides these there are important woollen-mills, tanneries, and printing-offices. It has many fine examples of Gothic architecture, including its cathedral, the church of St. Jacques, and others, and its public buildings are mostly elegant structures. The town is rich in collections of various kinds, and has a university with a large library. The older parts have narrow and dirty streets, but these are being rapidly replaced by large thoroughfares and hand-

some buildings. Pop. 1891, 153,324.—The province has an area of 1117 square miles, with a population of 718,656. Until 1795 it was an independent state, governed by *prince-bishops* of the German empire; in that year France included it in the department of the Ourthe, but it was restored to Belgium in 1815, excepting certain portions annexed to Prussia.

Liegnitz (lē'h'nits), a town of Prussia, in the province of Silesia, 40 miles W.N.W. of Breslau. It is an old but well-built town, defended by a castle, and surrounded by a boulevard planted with fine trees. It contains interesting churches, schools, and other public buildings. Its manufactures include machinery and hardware, pianos, gloves, woollens, cottons and linens, hosiery, &c. Pop. 37,157.

Li'en, in law, in its most usual acceptation, signifies 'the right which one person, in certain cases, possesses of detaining property placed in his possession belonging to another, until some demand which the former has is satisfied.' In the U. States liens are of two kinds: 1, *specific liens*, that is, where the person in possession of goods may detain them until a claim, which accrues to him from those *identical* goods, is satisfied; 2, *general liens*, that is, where the person in possession may detain the goods, not only for his claim accruing from them, but also for the general balance of his account with the owners.

Lieou-Kieou. See *Loo-Choo*.

Lierre (lē-ār), or **LIER**, a town of Belgium, in the province and 10 miles south-east of Antwerp, at the confluence of the Great and Little Nethe. It manufactures linen, woollen, silken, and cotton fabrics, lace, &c. Pop. 18,156.

Lieutenant (French *lieu*, place, *tenant*, holding), in military language, the officer next below a captain. The distinction between first and second lieutenants exists in the British army and in that of the United States. A lieutenant in the navy is the officer next in command to the captain of a ship. He takes rank both in the British and United States' services with a captain in the army.

Lieutenant, LORD, of a county, in Great Britain, an officer appointed by the crown, the permanent and chief local representative of the sovereign. The office is supposed to have been instituted about the reign of Henry VIII. He appoints a certain number of duly qualified deputy-lieutenants,

these appointments being subject to her majesty's approval; he also nominates to the lord chancellor persons to serve as justices of the peace for the county, the latter being also sub-deputy lieutenants. He may also recommend for first commissions in the reserve forces. He is *ex officio* a member of the County Council.

Lieutenant-colonel, in the regular army, is the officer next in rank to a colonel, and the senior of a major. He has actual command of a regiment, and is responsible for the discipline and comfort of the troops under his command, and for the various details of their organization.

Lieutenant-general, a general officer in the army, ranking above a major-general and below a general.

Life. To give an unobjectionable definition of life is impossible, as whatever the definition may be it will probably err either from redundancy or defect. Life has been defined as: 'the sum total of the forces that resist death,' 'the constant uniformity of phenomena with diversity of external influences,' 'the special activity of organized bodies,' 'organization in action,' 'a collection of phenomena that succeed each other during a limited time in an organized body,' 'the twofold internal movement of composition and decomposition, at once general and continuous.' Herbert Spencer's conception of life is: 'The definite combination of heterogeneous changes, both simultaneous and successive, in correspondence with external coexistences and sequences.' Mr. G. H. Lewes suggests the definition: 'Life is a series of definite and successive changes, both of structure and composition, which take place within an individual without destroying its identity.'

Life-assurance. See *Insurance*.

Life-boat, a boat for saving persons from shipwreck. The first life-boat was patented in Great Britain by Lukin in 1785, but Henry Greathead introduced an improved form in 1789 which proved very successful, and till 1851 was almost the only one in use. A boat approved by the Royal National Life-boat Institution of Britain is now the recognized English model, and possesses in the highest degree all the qualities which it is desirable that a life-boat should possess:—1. Great lateral stability, or resistance to upsetting. 2. Speed against a heavy sea. 3. Facility for launching and taking the shore. 4. Immediate self-discharge of any water breaking into her. 5. The important advantage of self-

LIFE-BOAT — LIFE-BUOYS.

righting if upset. 6. Strength. 7. Stowage-room for a large number of passengers. The life-boat transporting carriage is an important auxiliary to the boat. The life-boat is kept on this carriage in the boat-house ready for immediate transportation to the spot most favourable for launching to the wreck. In this way a greater extent of coast can secure the benefits of the life-boat than could otherwise be the case; besides, a boat can be readily

launched from a carriage through a high surf, when without a carriage she could not be got off the beach. The machine is admirably contrived, and the boat may be launched from it in an upright position with her crew on board. The most extensive and perfect life-boat service is that of the Royal National Life-boat Institution of Great Britain, founded in 1824, and supported by voluntary contributions. No less than 33,243 lives have been saved since the foundation of this institution till 1888, and £74,162 were expended in life-boats, life-boat carriages, boat-houses, stores, wages, and rewards for gallant services during the year 1887 alone. The fleet consists of nearly 300 fully-equipped boats. About £3000 are required to provide and endow a life-boat of the English pattern. The Life-saving Service of the United States is supported by government funds, and the Atlantic and some of the lake coasts are now studded with life-saving stations, provided with suitable boats, appliances, and houses of refuge for the saved. Since its introduction in 1871 to June 30, 1892, the crews of the 242 stations saved 51,834 lives and \$78,715,387 worth of property. The cost to the Government for the fiscal year 1892 was \$1,009,235.

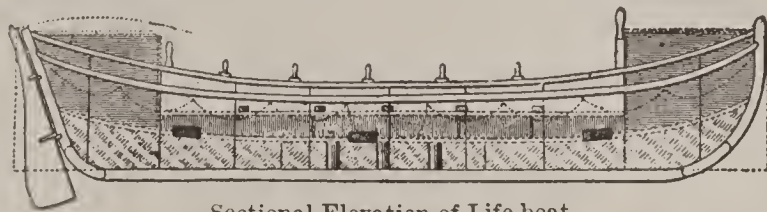
Life-buoys, Life-rafts, &c. Various kinds of buoys or other apparatus for the preservation of human life in cases of shipwreck or danger from drowning in other

circumstances have been introduced from time to time, constructed in all sorts of shapes and materials. India-rubber has been largely used in the construction of life-

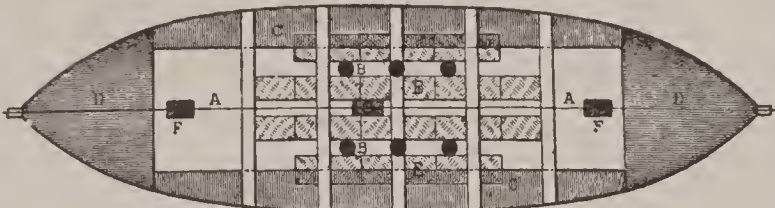
buoys, generally in the form of belts which can be easily inflated by the wearer in the course of a few seconds. They are very buoyant and portable, but easily punctured or torn, and soon decay if put aside while damp. Hence the interior has come to be divided into cells, so that the

rupture of one effects only a partial damage. Another sort is in the form of a waistcoat; and inflated pillows and mattresses made on the same principle have been found very effective. Naval officers have also strongly recommended mattresses stuffed with cork. The life-buoy most favoured by sea-

men of late years is composed of slices of cork so neatly arranged that they form a buoyant zone about 32 inches in diameter, 6 inches wide, and 4 inches thick. It contains about 12 lbs. of cork, is compactly covered with painted canvas to protect it from being injured by the water, and furnished with looped life-lines, that several, if necessary, may at once have a convenient hold. The belts in use by the Royal Life-boat Institution are made of cork fastened in canvas, securing great buoyancy with strength, while they afford at the same time a certain amount of protection in cases of contact with rock or wreck, and some degree of warmth. Various new life-saving suits have been shown at recent exhibitions.

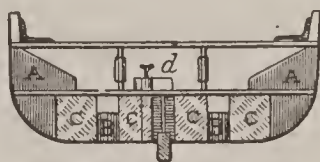


Sectional Elevation of Life-boat.



Deck Plan of Life-boat.

A, Deck. B, Relieving tubes. C, Side air-cases. D, End air-chambers. E, Ballast. F, Air-scuttles. G, Scuttle for air and pump.



Midship Section.

A, Side air-cases. B, Relieving tubes. C, Spaces packed with cork. d, Ventilation scuttle.



Seaman with Life-belt (of Cork).

Life-estate, in English law, an estate or interest in real property for life.

Life-guards. See *Guards*.

Life-insurance. See *Insurance*.

Life-rent, in Scotch law, the use and enjoyment for life of a sum of money or an heritable subject, the person enjoying it being called a *life-renter*, the proprietor of the subject the *fiar*, and the subject the *fee*.

Life-rockets, projectiles by means of which a rope is thrown either from a ship in distress to the shore, or from the shore to the ship, generally the latter. The most reliable missiles are those that are discharged from a mortar or gun by gunpowder, having a line attached to them. The *life-mortar* of Captain Manby, invented in 1807, is practically still that in use, though variations in details have been made on it from time to time. His missile was a shot with curved barbs, resembling the flukes of an anchor, to grapple the rigging or the bulwarks of a ship. An ingenious rocket-apparatus now in use is Rogers' life-anchor. It consists of a three-fluked anchor, 12 lbs. in weight, having the flukes so hinged that they pack closely together. When the anchor has been shot out from a mortar 100 or 200 yards, the flukes open and fasten to the beach or to a ship, and thus establish a communication between the two for dragging boats or men ashore. The best lines are those made of loosely-spun Italian hemp. There are several ways of arranging or *faking* the line so that it may run out quickly without kinking or entangling. The sling life-buoy is employed in conjunction with the rocket apparatus, after communication has been established by a rope from the shore to the vessel. It consists of a circular cork life-buoy, having a pair of canvas breeches attached to it. The legs of the occupant protrude below the breeches, while his armpits rest on the buoy. The shipwrecked are by this means brought to the shore one by one, the buoy being drawn backwards and forwards by means of a travelling block. Or the life-car, a sort of covered boat, may be used to convey the men ashore. In the United States the management of the life-rocket apparatus is under the control of the Life-saving service. The stations surround all parts of the Atlantic and lake coasts, presided over by a general superintendent, with headquarters at Washington. They are supported by appropriations made by Congress. On the Atlantic beaches the stations are located five miles apart,

Liffey, a river of Ireland, which rises in county Wicklow, runs w. into Kildare, then turns N.E. and passes through the county and city of Dublin into the Irish Sea; length, 50 miles. See *Dublin*.

Lifts, HYDRAULIC, &c., contrivances now in common use for raising goods or persons from one story of a building to another. They consist usually of a cage or platform suspended by a rope or chain, and rising vertically in a shaft within the building, the motive power being the pressure of water on the plunger of a hydraulic press. Ships also are lifted for repair by means of contrivances called *lifts*, which are either screws, hydraulic-presses, or balance-pontoons. Many lifts are worked entirely by steam-power, and have no water-ram. The lifts in mills, grain and wool stores, &c., are now generally called *elevators*; and in the United States this term is applied to almost every description of lift.

Ligament, in anatomy, the strong, tendinous, inelastic white bodies which surround the joints, and connect bones, or strengthen the attachments of various organs, or keep them together. Every joint is surrounded by a capsular ligament; the tendons at the wrist and ankle are bound down by what are called the annular ligaments. In dislocations of joints the capsular ligament is often broken.

Ligan. See *Flotsam*.

Light, the agent which enables us through the organ of sight to take cognizance of objects; it has a heating and chemical action which is all-important to animals and plants; without it there would probably be neither animal nor plant life. The sun, the fixed stars, nebulae, certain meteors, and terrestrial bodies in a state of incandescence or phosphorescence are self-luminous. The origin of light has been explained by two main theories, the *emission* or *corpuscular* theory adopted and developed by Newton, and the *undulatory* or *wave* theory, the fundamental principles of which were laid down by Huygens and Euler. Newton held that the sun and other light-giving bodies threw off, with immense velocity, vast numbers of infinitely minute particles of matter, which passed into space, and by their mechanical action upon the eye brought about the sensation of light. Numbers of distinguished men accepted this theory, and many of the phenomena of light were plausibly explained by it. Huygens suggested that light was due to some sort of wave motion

LIGHT.

transmitted through a medium. His theory, offered towards the end of the 17th century, made little progress until the beginning of the present century, when its truth was amply established by the labours of Young, Fresnel, and others; and it is now universally accepted. Though we are warranted in recognizing the existence of the transmitting medium called ether, of its nature we know as yet next to nothing. Rays of light proceed in straight lines, and when a screen is removed to twice or three times its distance from a luminous point it receives only one-fourth or one-ninth of the light per unit of area which it received formerly. This is the law of inverse squares, or,—the intensity of the light received from a luminous point is inversely proportional to the square of the distance from the point. Advantage is taken of this fact in determining the relative illuminating powers of two sources of light by means of the photometer. In 1676 Røemer discovered that light is not instantaneously propagated from luminous bodies to the eye; and he calculated its velocity. Bradley, Foucault, Fizeau, Cornu, &c., made similar measurements, and it has been determined that light travels at the rate of about 186,000 miles per second.

When light falls upon the surface of a body part of it is reflected. When the surface is smooth and regular an eye placed to receive the reflected rays generally observes an image of the source of light, and the surface may be called a mirror. When it is not smooth the light which falls upon it is scattered in all directions, so that the surface itself becomes visible; planets and nearly all terrestrial objects become visible in this way by means of reflected solar light. While part of the light which falls upon the surface of a body is reflected part enters into the body, which absorbs or destroys a certain amount of it and may allow the rest to pass through. When light falls nearly vertically on a glass surface very little of it is reflected, but as the incidence becomes more and more oblique a greater and greater proportion of the light is reflected. Polished metals, particularly silver, are good reflectors of light at all incidences, and hence metallic surfaces are most commonly used as mirrors. The law of reflection was known to Archimedes; it is—the incident and reflected rays make equal angles with a perpendicular to the surface, and lie in the same plane with it. When a ray has passed obliquely from air into water, although in the

water as in the air it is a straight line, this is not a mere continuation of its old path; it is bent to some extent at the point where it enters the new medium, the bending of the ray being called *refraction*. This bending of a ray when it passes from one medium, such as air, into another homogeneous medium, such as glass or water, or from air into denser air, is subject to a particular law. The law of refraction was discovered in the 17th century; it is—whatever be the obliquity of a ray passing from one medium to another, the sines of the angles made by the incident and refracted rays with the perpendicular to the refracting surface are in a constant ratio, which has been called the *index of refraction*. When a ray of light passes through a medium, such as the atmosphere, which continuously varies in density from place to place, its direction continuously changes, so that it is a curved line, a fact to which the phenomenon of the mirage is due. The application of mathematics to the two laws of reflection and refraction is called *optics*: this science includes the formation of images by mirrors and lenses, the eye, microscopes, telescopes, &c. See *Optics*.

Newton found that red light is not so much refracted as blue light when it passes from one medium to another. When a ray of solar light is refracted in passing through a glass prism he found that a great number of rays of different colours left the prism, the blue ray being most bent from its former path and the red ray least. (See *Prism, Rainbow*.) Letting these rays fall upon a screen he obtained a band of colours which he called a spectrum. Thus he had decomposed solar light and found it to consist of a mixture of lights of every gradation of refrangibility. On permitting all the coloured rays to pass through a lens before falling on the screen they combined and became white light again. Newton failed to observe one peculiar feature of the spectrum which has since been studied, and has led to important results—namely, that it was not really continuous, but was crossed by a number of dark lines. From this has arisen the instrument called the *spectroscope* and the branch of physics called *spectrum analysis*. See these arts.

In Newton's experiment with solar light and the prism we find that the blue and green rays very slightly affect a thermometer, the yellow rays affect it slightly, and the extreme red rays possess great heating

properties; moreover, when the thermometer is passed beyond the red into a space in which there are no luminous rays a maximum heating effect is produced. Again, the red and yellow rays are all but incapable of blackening photographic paper, whereas the blue and violet rays exert a rapid chemical action, and this is even exceeded by the invisible rays beyond the violet. It is evident then that (1) some of the solar rays which pass through the prism do not affect the retina; these rays are either less refrangible than red light, or are more refrangible than violet; (2) the least refrangible solar rays possess most heating power; (3) the most refrangible rays are capable of exerting the most powerful chemical action. As glass prisms absorb many of the heat rays it is convenient to use prisms of rock-salt in examining the heat (red) end of the spectrum.

Young showed that two rays of light may destroy each other's effects and produce darkness. He applied this discovery to the explanation of many natural phenomena, such as the colours in mother-of-pearl, on soap-bubbles, &c. It has also been shown that rays of light may bend round obstacles. When a ray of light enters Iceland-spar it divides into two rays which travel in different directions; these two rays possess peculiar properties which are not exhibited by ordinary rays of light, and are said to be *polarized*. These polarized rays cannot be made to interfere or destroy each other's effects, but either of them may be divided into two interfering rays. These and other allied phenomena are accepted by physicists as proofs that (1) there exists throughout all space a very elastic medium of small density, known as the *ether*; (2) the particles of all bodies are in a state of vibration; a rise in temperature of a body indicates an increase in the rapidity of vibration of its particles; (3) radiation of heat consists in the communication of these vibrations from the particles of a body by the ether to all parts of space; (4) when these vibrations communicated by the ether become rapid enough they are able to affect the retina of the eye and are then called light; (5) lights differ in colour when their vibrations are not executed in equal times; (6) the vibrations of particles of the ether are all executed at right angles to the direction of propagation of the light; (7) in a ray of polarized light the vibrations are all executed at right angles to a certain plane called the plane of polarization; (8) the

planes of polarization of the two rays in Iceland-spar mentioned above are at right angles to one another.

Light, ABERRATION OF. See *Aberration*.

Light, ARTIFICIAL, any kind of illuminant for supplementing the light of the sun. Some form of artificial light must have been in use for domestic purposes from the very earliest times, but though large cities and a high state of civilization existed among the Egyptians, Greeks, and Romans, the systematic lighting of streets was unknown to them. From the writings of Libanius, however, who lived in the beginning of the 4th century after Christ, we may conclude that the streets of his native city, Antioch, were lighted by lamps, and Edessa, in Syria, was similarly illuminated about A.D. 500. Of modern cities Paris was the first to light its streets. In the beginning of the 16th century it was much infested with robbers and incendiaries, so that the inhabitants were ordered, in 1524, to keep lights burning after nine in the evening, before all houses fronting a street. In 1558 *falots* (a large vase filled with pitch, rosin, and other combustibles) were erected at the corners of the streets. In London the inhabitants were instructed to hang out candles in 1668. A more definite order was issued in 1690. Every housekeeper was required to hang a light or lamp, every night, as soon as it was dark, between Michaelmas and Lady-day, and to keep it burning till the hour of twelve at night. Successive acts of parliament and orders of the common council provided from time to time for the better lighting of London. The Hague commenced street lighting in 1552, Hamburg in 1675, Berlin in 1679, Copenhagen in 1681, Vienna in 1684, Hanover in 1696, Leipzig in 1702, and Dresden in 1705. The application of coal gas to economical purposes by Murdoch in 1805 opened a new era in artificial lighting. See *Electric Light, Gas, Paraffin, Petroleum*.

Light, ELECTRIC. See *Electric Light*.

Light Cavalry, or HORSE. See *Cavalry*.

Lighter, a large, open, flat-bottomed vessel, employed to carry goods to or from a ship.

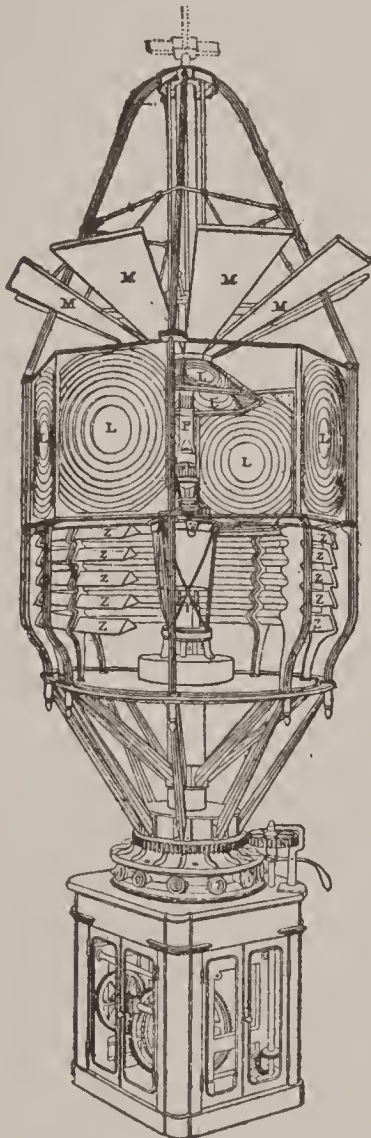
Lightfoot, JOHN, an English divine and Hebrew scholar, born at Stoke-upon-Trent 1602, died at Ely 1675. He was educated at Cambridge. He held various livings, and in 1655 became vice-chancellor of Cambridge; but his claim to notice rests chiefly on his great knowledge of rabbinical literature and Hebrew antiquities, and his able

LIGHTHOUSE.

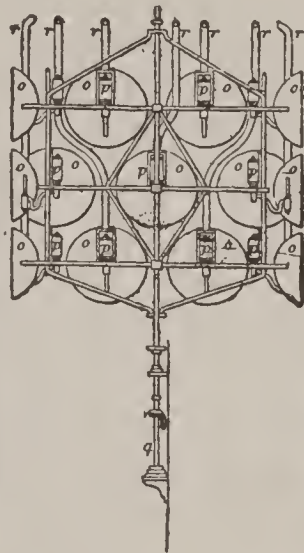
biblical criticism. Of his writings the *Horæ Hebraicæ et Talmudicæ*, &c., are the most important.

Lighthouse, a tower or other lofty structure with a powerful light at top, erected at the entrance of a port or on some rock or headland, and serving as a guide or warning of danger to navigators at night. The

Pharos of Alexandria, founded about 300 B.C., is the earliest building erected expressly as a lighthouse of which we have any authentic record. It is stated to have been 550 feet high. Lighthouses are supposed to have been erected by the Romans at Flamborough Head, Dover, and Boulogne. In modern times the first important light-

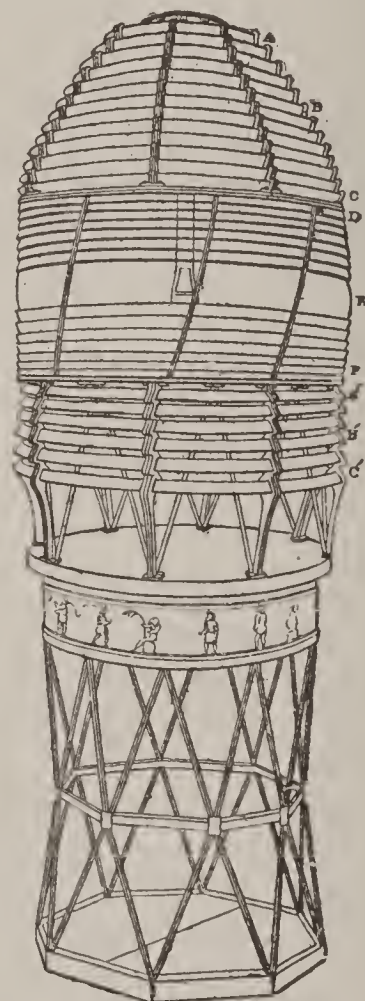


Revolving Dioptric Apparatus.



Elevation and Plan of Revolving Catoptric Frame.

LIGHTHOUSE.



Fixed Catadioptric Apparatus.

house erected was the Tour de Cordouan, at the mouth of the Garonne in France, founded in 1584 and completed in 1610, altered and improved in 1727. It is 197 feet in height, and in architecture surpasses all other lighthouses in the world. The first sea-light on the British coasts, for which a toll was leviable, was that of Dungeness, for which letters patent were granted by James I. shortly after his accession. Until about 1676 nearly all the lighthouses were provided by private persons; subsequently they began to be built by the corporation known as Trinity House, and an

act passed in 1836 empowered the corporation to purchase all private lights. By the Merchant Shipping Act, 1854, the supervision of the lighthouses passed into the hands of the Board of Trade, Trinity House remaining the administrative body for England and Wales, the Commissioners of Northern Lights for Scotland and the Isle of Man, and the Port of Dublin Incorporation for Ireland. The light dues vary between £300,000 and £400,000 annually. In the United States the lighthouses are under the Lighthouse Board, which has charge of all buoys, beacons, &c., on the coasts and waters of the States.

The earlier lights were simply of wood, and later fires of coal exposed in open chauffers upon the top of a tower. When oil was first introduced as an illuminant is not known. An immense improvement in lighting was made a few years previous to the French revolution by the introduction of parabolic reflectors, which concentrate and throw forward in a horizontal direction the rays of light proceeding from lamps placed in their foci. At the same time the revolving frame carrying the lamps and reflectors was introduced, which has proved of the greatest utility in establishing a distinction between lights. The reflectors are composed of sheet-copper plated with silver, and formed into a parabolic curve by a laborious and delicate process. This mode of lighting is termed the *catoptric* or *reflecting* system, and was rapidly adopted in Britain after its first employment in France. It is so called in opposition to the *dioptric* or *refracting* system, in which the illumination is produced by a central lamp, the rays from which are transmitted through a combination of lenses by which it is surrounded. The adoption of lenses in lighthouses, though suggested as far back as the middle of the last century, was first carried into practical effect in 1788 by M. Augustin Fresnel, a distinguished French savant. The superior advantages which this system has been found to possess over that of reflectors has led to its general adoption in most lighthouses. Fresnel likewise contrived a combination of the two systems, the apparatus in which consists of thirteen rings of glass of various diameters, arranged one above another in an oval form. The five middle rings form a cylindric lens through which the rays from the central lamp are transmitted by *refraction*, while the other rings or prisms, five of which are upper and three lower, are constructed in such a manner as to project by *reflection* the light from the focus in a direction parallel with the refracted rays. The light thus obtained is termed the *catadioptric* light. A modification of the dioptric and catadioptric systems, so as still further to prevent the loss of the rays of light, and thereby increase the intensity of their resultant beam, was introduced by Mr. Thomas Stevenson under the designation of the *holophotal* system, its object being to effect the useful application of the *whole* of the light. The catoptric, dioptric, and catadioptric systems are illustrated in the accompanying figures. In the

first the reflectors *o o* are shown as arranged on the revolving frame, *p p* being the oil-lights, *r r* copper tubes conveying away the smoke. In the dioptric apparatus *F* is the light, *L L' L' L'* are lenses, *M M* plane mirrors reflecting the rays falling on them in a horizontal direction, *z z* zones or belts of glass prisms. In the other figure *ABC*, *A'B'C'*, are respectively upper and lower zones of prisms, *DEF* the cylindric refracting belt.

Various modes of exhibiting the light have been introduced so as to establish a distinction between different lighthouses. In the British charts lighthouses are marked by one or other of the symbols *F*, *Fl*, *F* and *Fl*, *Rev*, *Int*, *Alt*, where *F* means *fixed* or steady; *Fl*, *flashing*, showing five or more flashes and eclipses alternately in a minute; *F* and *Fl*, a *fixed* light, with a white or red *flash* in addition (preceded and followed by a short eclipse), at intervals of two, three, or four minutes; *Rev*, *revolving*, the light gradually increasing to full effect and gradually decreasing to eclipse at equal intervals. *Int*, *intermittent*, suddenly appearing in view, remaining visible for a certain time and then as suddenly eclipsed for a shorter time; *Alt*, *alternate*, red and white lights at equal intervals without any intervening eclipse. A large majority of the lights of the British islands are fixed, and a considerable number are revolving. A majority of the revolving lights have a period of one minute; very few less than one minute; some as long as three minutes. Somewhat similar designations are adopted for distinction in America. A system of alternate flashes and eclipses (somewhat similar to the dot and dash of the Morse alphabet) has been proposed as an easy means of recognition of particular lights.

Oil, particularly paraffin, is commonly employed at present, and it is likely to remain in use in isolated lighthouses. Gas has been substituted for oil in some lighthouses; with gas an eclipse can be simply produced by a partial stoppage in the supply pipes, and there is no such waste of light as when oil is employed. A burner for gas has been invented by Mr. J. R. Wigham, which presents a total of 108 jets arranged in concentric circles. Gas has been successfully employed in illuminating buoys for the guidance of vessels. The buoys (which, of course, are gas and water tight) are charged to a pressure of perhaps ten atmospheres, giving a continuous light for three or four months; a luminous paint has also

recently been applied with advantage to buoys. The electric light has been adopted for a number of lighthouses, and recent experiments prove it to be the most powerful and penetrative of all lights; there are, however, still some drawbacks to its general application, and some authorities report against it as a lighthouse illuminant. The *Eddystone* and *Bell Rock* are the two most celebrated British lighthouses. Among lighthouses, built under peculiar difficulties of construction, is the Tillamook Rock light-station, opposite Tillamook Head, Oregon. Opposite Crescent City, Cal., at North-west Seal Rock, the difficulties were even greater. In Delaware Bay, on a shoal known as Fourteen-foot Bank, an extremely difficult foundation was overcome. Off the coast of Florida, on Fowey Rocks, likewise at Sanibel Island and Cape San Blas, important light stations have been erected.

Lightning, a flash of light resulting from a sudden discharge of atmospheric electricity. It may be a diffused reddish white or violet flash, seemingly spread over a considerable extent of the sky, or a zigzag or rather sinuous line of very brilliant light, resulting from a discharge between two clouds or between a cloud and the earth. *Heat* or *sheet lightning* is unaccompanied by thunder; it is now generally held to be the reflection from aqueous vapour and clouds of a discharge occurring beyond the horizon. Sometimes during a thunder-storm *fire-balls* are seen, but no exact observations of them have yet been made. Experiments show that the duration of a flash of lightning is inconceivably small, in some instances not more than a millionth part of a second. The *spectrum* of lightning shows the presence of incandescent nitrogen, oxygen, hydrogen, and sodium. Certain electroscopic experiments seem to show that previous to a discharge between two clouds internal discharges are taking place in both. Lightning in passing through air and non-conductors, metallic rods, &c., exhibits all the phenomena of the passage of a very great quantity of electricity; it kills animals, splits trees and stones, and melts thin wires. Sometimes on entering the earth the lightning melts the siliceous substances in its way, producing the tubes called *fulgurites*. After a lightning discharge the peculiar odour of ozone may be observed, as in the neighbourhood of an electric machine. Objects at a distance from a place of discharge may have previously been charged with

electricity by the induction of the clouds; the distant discharge suddenly sets free this electricity so that it passes through the objects to the ground, producing a *return shock*; men and animals have often been killed in this way. The Royal Meteorological Society have collected a large number of photographs of lightning flashes from all parts of the world, and it is hoped that by their means many obscurities connected with the phenomenon will soon be cleared up.—*Thunder* is due to the sudden disturbance of the air produced by a lightning discharge; the long rolling effect is perhaps due to echoes from the clouds, perhaps partly to there being a number of discharges at different distances from the observer. Sound travels at ordinary temperatures about 1100 feet per second, so that a thunder-clap from a distance of one mile would reach us in about five seconds. See *Conductor*, *Electricity*.

Lightning-rod. See *Conductor*.

Lights, in public worship. Light in Scripture is frequently referred to as a symbol of the Divine Presence, and in the ceremonial worship of the Jews and early Christians candles and candlesticks, or lamps, play an important part. Candles were lighted during the reading of the gospel, at baptisms, at funerals, and round the tombs of martyrs. The Feast of the Purification was popularly called Candlemas, on account of the numerous lights employed in its ceremonies. In the Roman Catholic Church lights are kept burning during the whole time of the celebration of mass. Candlesticks, and sometimes candles, are placed on the altar in many English churches, but they are not lighted for ceremonial purposes except by the ritualists. See *Ritualists*.

Light-ship, or **LIGHT-BOAT**, a vessel, usually single-masted, serving as a lighthouse in positions where a fixed structure is impracticable. Octagonal lanterns, fitted with Argand lamps placed in the foci of parabolic reflectors, are usually hoisted on the mast; but they are less efficient and more expensive in maintenance than land lights.

Lign-aloes. See *Aloes-wood*.

Lignine, a modification of cellulose (which see).

Lignite, or **BROWN COAL**, compressed and altered vegetable matter intermediate in its qualities between peat and coal. It occurs chiefly in the tertiary strata in many European countries, occasionally in thick beds, as in Germany and France, and is to some extent used as fuel.

Lignum-vitæ. See *Guaiacum*.

Ligny (lĕn-yĕ), BATTLE OF, June 16, 1815. See *Quatrebras* and *Waterloo*.

Lig'ula, LIG'ULE, in botany, a strap-shaped petal of flowers of the order Compositæ; also the membrane which occurs at the base of the lamina of a grass leaf, as that of millet. Hence the term *ligulate*, applied especially to the ray florets of Compositæ.

Liguori (lig-ŭ-ō'rĕ), ALPHONSO MARIA DE, an Italian prelate, born 1696, died 1787, the founder of the sect called *Redemptorists*, or *Ligorists*. In 1732 he founded a monastery at Villa Scala (Principato Citra) with the approbation of the pope, the members of which, forming the *Order of the Most Holy Redeemer*, were to be employed in the instruction of the people. In 1762 he was appointed bishop of Santa Agata de' Gotici (in the Principato Ultra) by Clement XIII., which office he held until his retirement in 1775 to Nocera de' Pagani, the chief seat of his order. Since 1816 his name has been enrolled among Roman Catholic saints.

Lig'uria, one of the larger divisions (compartimenti) of Italy; area, 2055 sq. miles; pop. 930,609. It includes the towns of Genoa, Spezzia, and St. Remo, and is the most important maritime division. The Roman Liguria was much more extensive. The Republic of Genoa existed as the *Ligurian Republic*, under a democratic constitution granted by Bonaparte, from 1797 to 1805, when it was annexed to France. From 1814 to 1860 it formed part of the kingdom of Sardinia.

Lig'urite, a variety of sphene, a mineral occurring in oblique rhombic prisms, of an apple-green colour, occasionally speckled externally; so called on account of its being chiefly found in Liguria. Its colour, hardness, and transparency have caused it to be classed as a gem.

Ligus'trum. See *Privet*.

Lilac (*Syringa vulgaris*, nat. order Oleaceæ), a familiar fragrant-flowered shrub, 8-10 feet high, is a native of south-eastern Europe and Asia, and is one of the most familiar and most beautiful of our spring-flowering ornamental shrubs. There are several varieties, the most common colour of the flowers being lilac, but some are white.

Lilburne, JOHN, a celebrated English sectary, born 1618, died 1657. For tracts against the Anglican hierarchy he was whipped and imprisoned in 1637, but the Long Parliament released him in 1640. His friends got the conviction declared il-

legal and tyrannic, and Lilburne received £3000 as indemnity. He then joined the army, and rose to the rank of lieutenant-colonel. He was one of the party known as the *Levellers*, and for his attacks on Cromwell and others was oftener than once sent to the Tower. Having been condemned to exile, and having returned without leave, he was put in prison and tried for his life, when he was acquitted but not liberated for some time. Latterly he became a member of the Society of Friends. Hume describes him as 'the most turbulent, but also the most upright and courageous of men.'

Lilia'ceæ, the lilies, a large natural order of endogenous plants. They are stemless herbs, or shrubs with a simple or branched trunk, with bulbous or fascicled roots. They have six hypogynous or perigynous stamens, with usually introrse anthers; a three-celled ovary, each cell being usually many-ovuled, an entire style, and a capsular fruit. They are much more abundant in temperate climates than in the tropics, where they chiefly exist in an arborescent state. The lily, fritillary, hyacinth, star of Bethlehem, tulip, dragon-tree, squill, aloe, onion, garlic, &c., belong to this order.

Lilith, according to Rabbinical legends Adam's first wife, mother of giants and demons.

Lilium, a genus of bulbous plants. See *Lily*.

Lille (lĕl), a town of France, capital of the department Nord, and chief fortress of the north-east of France, near the Belgian frontier. It is remarkably well built; has spacious, regular streets, lined with large, massive houses of brick or stone, with the usual public buildings and institutions found in large cities. The Haute and Basse Deule, sluggish streams, traverse the town, and are connected by a canal, while the country around is so flat that for about 1½ miles it can be laid under water. Lille is the centre of an extensive commerce. The manufacture of linen and cotton thread and fabrics are the most important, but fine woollen cloth, velvets, and carpets are also largely produced: in fact, the factories of Lille cover almost the whole range of textile goods. Chemicals, leather, machinery, paper, beet-sugar, &c., are also turned out in ever-increasing quantities. Lille originally belonged to the counts of Flanders. In 1667 it was taken by Louis XIV., and was fortified by Vauban. It was taken after a siege of several months by Eugene and

Marlborough in 1708, but was restored to France by the Peace of Utrecht in 1713. In 1792 it was ineffectually bombarded by the Austrians. Pop. 1891, 201,211.

Lillibulle'ro, originally, it is said, a watch-word of the Irish Roman Catholics in their massacre of the Protestants in 1641; afterwards, the refrain and name of a political song popular during and after the reign of James II.

Lillo, GEORGE, an English dramatic writer, born in London 1693, died 1739. Although carrying on the trade of a jeweller, he found time to write a number of well-received pieces for the stage, distinguished by great knowledge of human nature and morality. The most successful was his domestic drama entitled *The London Merchant, or the History of George Barnwell*, 1731.

Lilly, LILY, or LYLY, JOHN, an English dramatic and miscellaneous writer, born about 1553, studied at Oxford and Cambridge. He wrote nine dramatic pieces which are now forgotten. He attempted to reform and purify the English language in two fantastic romances entitled *Euphues* and his *Anatomy of Wit* (1580), and *Euphues* and his *England* (1581), which met with great success.

Lilly, or LILY, WILLIAM, English astrologer, born in 1602, died in 1681. He assumed the role of prophet and seer, and the credulity of the age was such that he was consulted and believed in by high and low. In 1644 he first published his *Merlinus Anglicus*, which he continued annually until his death. He wrote a number of mystic books, which generally met with a ready sale. His autobiography is very entertaining. He not only acquired fame, but also a large fortune.

Lily, a genus of plants, natural order Liliaceæ. The root is a scaly bulb; the leaves simple, scattered, or verticillate; the stem herbaceous, simple, and bearing at the summit very large and elegantly-formed flowers. The flower consists of six petaloid sepals, the calyx and corolla being alike in form and colour. There are many species, those best known in Europe being the white, orange, and scarlet lilies, the tiger lily, &c. The common white lily (*Lilium candidum*) is a native of Syria, Persia, and other eastern countries. The finest American species is the *L. superbum*, which grows in marshes to the height of 6 or 8 feet, bearing reflexed orange flowers spotted with black. A well known Japanese lily (*L. auratum*) is one of the noblest flowering plants in existence,

and highly fragrant. *L. giganteum* grows to the height of 12 feet. In the middle ages and in modern times the white lily has been the emblem of chastity, hence the Virgin Mary is often represented with a lily in her hand or by her side.

Lilybæ'um, the name given by the ancients to Cape Bæo, the most western promontory of Sicily. The Carthaginians, about B.C. 350, founded here a town of the same name, which became their principal naval station in Sicily. See *Marsala*.

Lily-of-the-valley (*Convallaria majālis*), a plant of the natural order Liliaceæ, distinguished for its beautiful bell-shaped flowers of an agreeable odour. It is found in Europe, Asia, and North America.

Lima, Allen co., Ohio, has manufactories of steam-engines, &c. Pop. 1890, 15,987.

Lima, the capital of Peru, is situated at the foot of granitic hills, 7 miles from Callao, its port on the Pacific, on the small river Rimac. It is regularly built, and many of the streets have a stream of water running down the centre. The numerous domes and spires give Lima a fine appearance from a distance, but the houses are mostly of unburnt brick. Among the public buildings and institutions the cathedral, the convent of San Francisco, the exhibition palace, and the university with its national library and museum, deserves special mention. The manufactures are unimportant, but there is a considerable import and export trade through the port of Callao. The climate is very agreeable, but the locality is subject to earthquakes, the most destructive being that of 1746. Lima was founded in 1535 by Pizarro, and called Ciudad de los Reyes (City of the Kings). In January, 1881, Lima capitulated to the Chilians, who occupied it for upwards of two years. Pop. estimated at 100,000.

Limas'sol, or LIMIS'so, a seaport of Cyprus, on the south coast, with a considerable trade. Pop. 6000.

Lima-wood, a name sometimes given to the wood of *Caesalpinia echinata*. See *Brazil-wood*.

Limax. See *Slug*.

Limber. See *Gun-carriage*.

Limbourg, or LIMBURG, a province of Belgium, separated by the Maas from Dutch Limburg; area, 931 sq. miles; pop. 220,658. Hasselt is the capital.

Limburg, a province of Holland, partly intersected by the Maas; area, 850 square miles; pop. 254,846. Agriculture and cattle-

rearing are the chief occupations, and there is a large export trade in butter and cheese. The capital is Maastricht.

Limburg, a town of Prussia in the district of Wiesbaden, on the Lahn, with a fine old R. C. cathedral in the Romanesque style, recently restored. Pop. 6485.

Lime, the oxide of the metal calcium. This oxide, which in a state of combination is one of the most abundant bodies in nature, has been known and used from the remotest antiquity. The forms in which it occurs native are very numerous, but it does not exist in a pure state in nature, its affinity for carbonic acid being such, that it absorbs it from the atmosphere, when it becomes converted into carbonate of lime. Combined with carbonic, sulphuric, phosphoric and other acids it constitutes large rock masses, and even mountains; it is present in sea and other waters; it is a constituent of most soils and of a great number of minerals; and is essential to plants and animals.

Ordinary lime is obtained with most facility from the carbonate (see *Limestone*), from which by a strong heat the carbonic acid may be expelled. This process is conducted on a large scale with the different varieties of limestone, which are calcined or burned in order to obtain the caustic earth, or *quicklime*, as it is called. The lime thus obtained, however, is rarely pure enough for chemical purposes. Pure lime is a soft, white substance, of the specific gravity of 2.3. It is quite infusible, but when heated in the oxyhydrogen blowpipe it emits one of the intensest of artificial lights, and it has accordingly been employed for a signal light and for facilitating the observation of distant stations in geodetical operations. It is soluble in about 700 parts of cold water. The solubility is diminished by heat. If a little water be sprinkled on new burned lime it is rapidly absorbed, with the evolution of much heat and vapour. This constitutes the phenomenon of slacking. The heat proceeds from the combination of the water with the lime, forming a *hydrate*, as the slacked lime is called. This is a compound of 56 parts of lime with 18 of water, or rather more than 3 to 1. The water may be expelled by a red heat. Lime-water is astringent, and somewhat acrid to the taste. It renders vegetable blues green, and yellows brown; and restores to reddened litmus its usual purple colour. Lime, submitted to the action of galvanism in high

intensity, afforded Sir H. Davy satisfactory evidence that, in common with the other earths, it consists of a metal, which he denominated *calcium*, and oxygen, the proportions being 72 of calcium and 28 of oxygen. (See *Calcium*.) Chlorine combines directly with lime, forming the very important substance used in bleaching, called *chloride of lime* or *bleaching-powder*. It is formed by passing chlorine gas over slacked lime. Chloride of lime is also used as a disinfectant.

The uses of lime are almost too numerous to mention, for there is hardly any operation in the arts for which lime is not at some part indispensable. In the manufacture of basic Bessemer steel (see *Steel*) it forms about one-half of what is called 'Thomas slag,' which, when ground, makes a cheap and efficient fertilizer; it is employed in the early stages of leather dressing to remove hair, fat, &c., from the hides; it is used in metallurgy as a flux; in soap-boiling to causticize the alkaline liquors; in the manufacture of washing soda; for neutralizing acids; for making mortars and cements; in agriculture to destroy inert or noxious vegetable matter, and to decompose heavy clay soils; and in the *materia medica*, chiefly as an antacid.

Lime, or **LINDEN** (*Tilia*, nat. order Tiliaceæ), a large tree, with alternate, simple, and cordate leaves, and sweet-scented flowers, disposed on a common peduncle. The common linden (*T. europæa*) is a well-known tree. The inner bark of all the species is very tenacious; it is called *bast*, and mats are made of it in Russia in large quantities. The wood is rather soft, close-grained, and much used by turners. The American lime, or bass-wood (*T. americana*), is a large and beautiful tree, resembling the European species.

Lime (*Citrus limetta*), a small globular-shaped lemon, the fruit of a shrub about 8 feet high. It is a native of India and China, but was introduced into Europe long before the orange, and is now extensively cultivated in the south of Europe, the West Indies, and some parts of Southern America. The fruit is agreeably acid, and its juice is employed in the production of citric acid, in beverages, &c.

Lime Light. See *Oxyhydrogen Light*.

Lim'errick, a city of Ireland, capital of Limerick county, and a county of itself, is situated at the interior extremity of the estuary of the Shannon. It consists of three parts,

LIMESTONE —— LIMITATION.

connected by five bridges, one of which, the Wellesley Bridge, a magnificent structure, crossing the harbour, cost £85,000. The principal buildings are the Episcopal and Roman Catholic cathedrals, savings-bank, chamber of commerce, exchange, assembly-house, linen-hall, and corn and butter markets. The industries include the curing of bacon, the preparation of butterine, flax spinning and weaving, and lace-making. There are distilleries, breweries, tanneries, corn-mills, a large military clothing establishment, and ship-building slips. Limerick is the leading port on the west coast for the shipment of produce. The borough returns two members to parliament. Pop. 37,072.—The county belongs to the province of Munster, area, 680,842 acres, of which one-fourth is under tillage. The surface is in general flat, or an undulating plain, excepting in the north-east, south, and south-west, where it rises into mountains. The principal river is the Shannon, the estuary of which forms great part of the northern boundary. The occupations are chiefly agricultural; pasturage and dairy farming are most general. Large quantities of farm produce are exported. Limerick returns two members to parliament. Pop. 1891, 158,563.

Limestone, a species of mineral comprising numerous varieties of carbonate of lime, differing considerably in external appearance, structure, and composition. It is, if pure, essentially composed of 57 parts of lime and 43 of carbonic acid; but in some rocks the limestone is intermixed with magnesia, alumina, silica, iron, &c. All limestones give readily to the knife. They are infusible; but when impure, by an admixture with a portion of other earths, they vitrify in burning. All limestones effervesce when a drop of strong acid is applied on the surface, and they dissolve entirely in nitric or hydrochloric acid. Limestone is found both in primary and in secondary rocks, but most abundantly in the last. It is also not uncommon in alluvial deposits, when it is called *calcareous tufa*. Limestone has frequently a granular structure; and the size of the grains is variable, in some degree corresponding with the relative age of the mineral. Thus limestone which occurs in beds in gneiss, has usually a coarse texture, and large granular concretions; but when its beds exist in mica slate, or argillite, its texture becomes more finely grained, and its colour less uniform. Silurian and Devonian limestones have a texture

more or less compact; the colours are often variegated; and they often contain fossils. Secondary limestone has a compact texture, a dull fracture, and usually contains shells, and sometimes other organic remains. It is always stratified. The specific gravity of limestone varies from 2.50 to 2.90. Calcareous spar is the purest variety of carbonate of lime. It is frequently very transparent, and is then strongly double-refractive, this peculiarity being best seen in the variety known as *Iceland spar*. Among the varieties of limestone are: *calcareous spar*, *granular limestone*, *foliated limestone*, *compact limestone*, *oolite* or *roestone*, *peastone* or *pisolite*, &c. Compact limestone passes into *chalk* when the particles are somewhat loosely connected with each other, so that the whole assumes an earthy character. A variety of very fine-grained compact limestone is used in lithography, the best being that obtained near Pappenheim and Solenhofen in Bavaria.

Limit, in mathematics, is a determinate quantity to which a variable one continually approaches in value. Thus if a polygon be inscribed in a circle, its area is of course less than that of the circle; but as the inscribed polygon is made to have more and smaller sides its area gets more nearly equal to that of the circle, though it can never quite equal it.

Limitation, in English law, a certain time, assigned by statute, within which an action must be brought, varying according to the subject of action. This matter is regulated by certain acts of parliament, called Statutes of Limitation. According to those now in force, actions are limited as follows:—Actions for the recovery of land, rent-charge, or redemption of mortgages, to 12 years after right accrued; of debt or covenant, if founded on a deed, to 20 years, on less formal agreement, to 6 years after breach; bills, promissory notes, trade accounts, arrears of rent or dower, to 6 years. In the case of persons under disabilities, as infancy, coverture, idiocy, lunacy, or absence beyond seas, the action may be brought within 12 years of its accruing, or within 6 years of the disability ending or the disabled person dying, but in no case does the limit allowed exceed 30 years. Actions for slander are barred after 2 years; actions on penal statutes, if brought by the party injured after 2 years, if brought by a common informer after 1 year. Actions by the crown are limited to 60 years. **An**

action for assault, battery, &c., must be brought within 4 years, an action for death by accident within 1 year. In a charge of murder the injured person must have died within a year and a day of the time when the injury was inflicted. These limitations do not apply to prosecutions for crime, or for breach of trust on the part of trustees, these may be instituted at any time. The American law is mainly based on the English statutes. For the law of limitation in Scotland see *Prescription*.

Limited Liability. See *Joint-stock Companies*.

Limnæ'a, a genus of fresh-water, univalve, gasteropodous molluscs, having a lung sac instead of gills. They have the power of floating on their back, the foot forming a kind of boat. They are found in all parts of the world, and occur fossil, especially in the Wealden.

Limoges (li-mōzh), a town of Western France, capital of the department of Haute-Vienne, and former capital of Limousin. The most remarkable edifices are the cathedral; the bishop's palace, the finest modern edifice of the town; the town-hall; and the public library. The principal industry is the manufacture of artistic porcelain, known as Limoges ware, and employing over 6000 hands; there are also wool and cotton spinning-mills, cloth factories, foundries, paper-mills, and extensive shoe and clog making establishments. In 1790, and again in 1864, whole quarters of the city were destroyed by fire. Pop. 1891, 72,697.

Li'monite, a very important ore of iron, varieties of which are bog iron ore and brown hæmatite. It is a hydrated oxide of a brownish colour, occurring in mammillated or botryoidal masses, and found in various parts of England, and abundantly on the Continent and in America.

Limousin (li-mö-san), an ancient province near the centre of France, forming at present the chief part of the departments of Haute-Vienne and of Corrèze. Limoges was the capital.

Limoux (li-mö), a town of France, dep. Aude, on the Aude. Pop. 6037.

Limpet, a gasteropodous mollusc which adheres to rocks partly by the suckorial powers of its broad disc-like foot and partly by a glutinous secretion. The common limpet (*Patella vulgāris*) is often found ensconced in a shallow pit excavated out of the rock, and which it has made or rasped out by the siliceous particles embedded in

its foot. From this pit the limpet, when covered by the tide, makes short journeys in quest of its food, which consists of algæ, and which it eats by means of a long ribbon-like tongue covered with numerous rows of hard teeth. The limpet is used as bait, and is eaten by the poorer classes of Scotland and Ireland. In tropical seas limpets attain an immense size, one species having a shell about a foot wide.

Limpo'po, or CROCODILE RIVER, a river of Southern Africa, which rises in the Transvaal not far from Pretoria, flows north-west, then north-east, forming for a considerable distance the boundary of the Transvaal, then south-east into the Indian Ocean north of Delagoa Bay; length about 1100 miles.

Lim'ulus. See *King-crab*.

Lina'ceæ, the flax family, a small natural order of exogenous plants, scattered more or less over most parts of the globe, those in temperate and southern regions being herbs, while the tropical representatives are trees or shrubs. They are principally characterized by their regular flowers, with imbricate glandular sepals having a disc of five glands outside the staminal tube; the ovary is three to five celled, with two ovules in each cell; the albumen is fleshy; the leaves are simple, usually stipulate, rarely opposite. The tenacity of the fibre and the mucilage of the diuretic seeds of certain species of *Linum*, such as the common flax (*L. usitatissimum*), are well known.

Li'nacre, or LYNACER, THOMAS, an eminent physician, born at Canterbury about 1460, died 1524. After receiving his first education in his native town he entered Oxford University, afterwards proceeded to Italy, and on his return was intrusted by Henry VII. with the education of Prince Arthur. He ultimately abandoned his medical practice for the church. In 1518 he founded the College of Physicians, of which he continued president till 1524. He made a Latin translation of the works of Galen.

Linaloe-wood, a wood obtained from tropical America (probably from a species of *Amyris*), yielding a fragrant oil used in perfumery.

Lina'res, a town of Spain, prov. Jaen, the chief town in a district rich in lead mines. Pop. 25,000.

Lina'ria, a genus of monopetalous, dicotyledonous plants, of the natural order Scrophulariaceæ.

Lincoln, Providence co., Rhode Island Pop. 1890, 20,355.

LINCOLN.

Lincoln (ling'kon), a city of England and a county in itself, capital of Lincolnshire, 120 miles north of London, situated on the Witham, and at the junction of several railways. It has been identified with the Roman Lindum Colonia, and at the time of William the Conqueror was a place of considerable strength and importance. The principal edifice is the cathedral, situated on a height (dating from the 11th century, and restored since 1862), chiefly in the early English, but partly also in later styles, with a tower over 260 feet high, in which is the famous bell known as 'Great Tom of Lincoln,' cast in 1610, cracked in 1827, and since recast into a new bell. The other most conspicuous buildings are the Guild-hall or Stone-bow (of the time of Richard III.), the remains of the castle which was founded by William the Conqueror, the old episcopal palace, and the fine old Roman arch spanning Hermin Street, a theological college, and school of art, &c. The manufacture of agricultural implements and machinery forms the chief branch of industry. Previous to 1885 Lincoln sent two members to parliament, but then lost one. Pop. 41,491.—**LINCOLNSHIRE** is a large maritime county on the east coast, bounded by the Humber, the German Ocean, and the Wash, and by the counties of Cambridge, Northampton, Rutland, Leicester, Nottingham, and York; area, 1,767,879 acres. The surface is generally an uninterrupted plain, the greater portion of which lies below the level of the sea, being protected by embankments. In a few places the fens and marshes continue nearly in their natural state, but round the Wash a great deal of very fine land has been gained from the sea since the commencement of the present century, and the embankments are gradually extending. In consequence of the richness of its pastures Lincolnshire has been long celebrated for its breed of horses, cattle, and sheep. In the best parts of the fens and marsh under tillage the crops chiefly cultivated are oats and wheat. Principal rivers, Trent, Witham, Welland, and Ancholme. The Witham has been made navigable from Boston to Lincoln; and the county is intersected by an intricate net-work of canals and dikes. Lincolnshire is divided into three parts—Holland, Kesteven, Lindsey. Pop. 472,778.

Lincoln, Logan co., Ill., is the seat of Cumberland University and State asylum for juvenile idiots. It has various factories. Pop. 1890, 6725.

Lincoln, capital of the state of Nebraska, on the right bank of Salt Creek, a tributary of the river Platte. The public buildings include the U.S. revenue offices, court-house, and post-office in one building; state-house, university, schools, and churches. It has a large trade in all kinds of merchandise, grain, live-stock, and lumber. Pop. 55,154.

Lincoln, ABRAHAM, the sixteenth president of the United States of America, born in Kentucky 1809. He removed with his family in 1816 to Spencer county, Indiana, and for the next ten years was engaged in



Abraham Lincoln.

laborious work of various kinds, having only about a year's schooling at intervals. On the breaking out of the Black Hawk war in 1832 he joined a volunteer company, and as captain he served three months in the campaign. He next opened a country store, was appointed postmaster of New Salem, Illinois, began to study law, and at the same time turned amateur land-surveyor. In 1834 he was elected a member of the Illinois legislature, to which he was again returned at the three following biennial elections, and in 1836 he was licensed to practise law. In 1846 he was elected a representative in Congress for the central district of Illinois, and voted steadily in Congress with the anti-slavery party. In 1849 and again in 1858 he was unsuccessful in attempts to enter the Senate. In the Republican national convention held at Chicago in May, 1860, he was nominated as a candidate for the presidency, and after several votes he gained a majority, and was eventually chosen unanimously. The Southern States, exasperated

at this defeat, and alarmed at the aggressive antislavery policy which many of the leading Republicans had proclaimed their determination to follow, refused to acquiesce in Lincoln's election, and began one after another to announce their secession, and to organize the means of resisting the enforcement of the claims of the central government. The election of Lincoln took place in November, 1860, and he assumed office on the 4th of March, 1861. It was the intention of Lincoln to use every means of conciliation consistent with the policy he deemed it essential to the national interest to pursue. On one point, however, his resolution was steadfast, to admit no secession, and before his assumption of office secession was as resolutely determined on the other side. On the 4th of February the Southern Confederacy had been constituted, and on the 13th of April the first blow in the civil war was struck by the capture of Fort Sumter by the Confederates. The events of the civil war during the next four years in Lincoln's career belong to the history of the United States. Lincoln's persistence in raising and pouring in fresh troops after every disaster finally enabled the Federal government to subdue the secession. The toleration of slavery was always in Lincoln's opinion an unhappy necessity; and when the Southern States had by their rebellion forfeited all claim to the protection of their peculiar institution, it was an easy transition from this view to its withdrawal. The successive stages by which this was effected—the emancipation of the slaves of rebels, and the offer of compensation for voluntary emancipation, followed by the constitutional amendment and unconditional emancipation without compensation—were only the natural steps by which a change involving consequences of such vast extent was reached. The determination of the Northern States to pursue the war to its conclusion on the original issue led to the re-election of Lincoln as president in 1864. The decisive victory of Grant over Lee on 2d April, 1865, speedily followed by the surrender of the latter, had just afforded the prospect of an immediate termination of this long struggle, when, on the 14th of the same month, President Lincoln was shot in Ford's Theatre, Washington, by an assassin named John Wilkes Booth, and expired on the following day. In the affections of the Americans Lincoln holds a place second only to Washington.

Lincoln College, a college of Oxford University founded in 1427 by Richard Fleming, bishop of Lincoln.

Lincoln's Inn. See *Inns of Court*.

Lind, JENNY (MADAME OTTO GOLDSCHMID), singer, born in Stockholm 1821, died 1887. She received part of her musical training under Garcia at Paris; achieved her first success in Berlin in 1845, and subsequently was received with a great ovation in her native city of Stockholm. She made her first appearance in London at Covent Garden in 1847 before an enthusiastic audience; went to the United States, where she married Herr Goldschmid in 1851; returned to Europe and made an extensive tour, finally settling in England. In recent years she seldom came before the public, but as professor in the Royal Academy of Music, and as trainer of the female voices in the Bach choir conducted by her husband, her talents were not lost.

Linden, a handsome forest tree. See *Lime*.

Lindisfarne. See *Holy Island*.

Lindley, JOHN, botanist, born at Catton, Norfolkshire, 5th February, 1799, died 1st November, 1865. His father was the owner of a nursery garden, and he received his education at the grammar-school of Norwich. He began at an early age to write on botanical subjects; received the appointment of assistant-secretary to the Horticultural Society in 1822, and became professor of botany in London University in 1829. He was editor of the *Gardener's Chronicle* from 1841 until his death.

Lindsay, Province of Ontario, Canada, on the Grand Trunk Railway. Pop. 1891, 6081.

Lindsay, or LYNDAY (lind'zā), SIR DAVID, an ancient Scottish poet, usually described as 'of the Mount,' an estate near Cupar in Fife, was born about the year 1490, died 1555. He studied in the University of St. Andrews, and in 1509 became page of honour to James V., then an infant. In 1528 he produced his *Dreme*, and in the following year presented his *Complaynt* to the king. In 1530 he was inaugurated Lyon king-at-arms, and knighted, and in 1531 sent on a mission to Charles V., on his return from which he married. He soon afterwards published a drama entitled a *Satyre of the Three Estatis*, followed in 1536 by his *Answer to the King's Flyting*; and by the *History and Testament of Squire Meldrum* in 1538. His last work, *The Mon-*

archie, was finished in 1553. For more than two centuries Lindsay was the most popular poet in Scotland. His satirical attacks on the clergy in some degree paved the way for the Reformation.

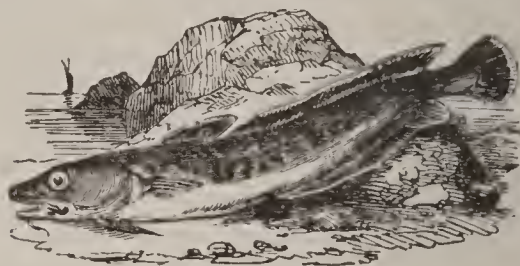
Line, in military language, the infantry of an army as distinguished from cavalry, artillery, militia, volunteer corps, &c.; but in some cases it is also applied to the ordinary cavalry regiments. A *ship of the line* is a ship of war large enough to have a place in the line of battle, and formerly a ship with not less than two decks or two tiers of guns.

Linen, cloth made of flax, has had a very ancient and extensive use. On the early monuments of Egypt artistic representations of the various processes of linen manufacture have been found, and the fine linen fabric in which the Egyptians wrapped their embalmed dead still gives evidence of the skill which they possessed. The Jews took with them into Canaan a knowledge of the manufacture; Tyre, Sidon, and Carthage seem also to have acquired the industry; while at an early period the manufacture of linen appears to have been common in Greece and Rome. In the middle ages linen and woollen were the chief articles of dress in all European countries, and among the Flemings in particular the flax manufacture rose to great importance. The linen manufacture has been known in England, Ireland, and Scotland for a long period. As early as the 7th century the Anglo-Saxon women were skilled in the weaving of this fabric, and fine linen was made in Wilts and Sussex in the 13th century. Since the extensive introduction of cotton, however, the linen industry has decreased in relative importance, this result having come about mainly within the present century. The chief centre of the manufacture in England is Leeds and neighbourhood. In Ireland the manufacture of linen was well established in the 17th century; subsequently it declined; but lately it has again obtained a flourishing position, Belfast being the centre of the manufacture. Dundee is the chief centre in Scotland for linen (especially coarse fabrics) as well as the allied jute manufacture. Dunfermline is celebrated for its table linens. The machinery used both in spinning and weaving linen is in general, with the exception of some special adaptations, the same as that used for cotton. (See *Cotton Spinning and Weaving*, also *Flax*.) The chief varieties of linen now manufactured are: lawn, which

is of fine quality and mostly produced in Ireland; plain cloths for shirtings, bedding, &c.; damasks, table-cloths, and other ornamental fabrics; and cambric, which is the finest of all linen fabrics.

Line of Beauty, a term used by some artists for an ideal line, frequently represented in the form of a very slender elongated letter S.

Ling (*Lota molva*), a species of sea-fish allied to the cod family (*Gadidæ*), and measuring from 3 to 4 feet in length. It abounds around the British coasts, and is



Ling (*Lota molva*).

caught with hook and line, and preserved in immense quantities in a dried state. From the beginning of February to May the ling is in highest perfection; the spawning season commencing in June.

Lingam, among the Hindus, the emblem of the male generative power of nature. It is worshipped either alone or in conjunction with the *yoni* or female generative power.

Lingard, JOHN, an English historian, born at Winchester 1771; died at Hornby 1851. He was educated at the English College, Douai; established a new college at Crook Hall, near Durham, himself being vice-president, in 1794; became a priest in 1800 at Newcastle-on-Tyne; opened Ushaw Roman Catholic College in 1808, and in 1811 retired as priest to Hornby in Lancashire, where he died. He was offered a cardinal's hat by Leo XII.; in 1839 he accepted a pension of £300 from the queen. His *Antiquities of the Anglo-Saxon Church* appeared in 1858, and his great work on *The History of England from the Invasion of the Romans to the year 1688* was first printed in 1819–25, and reached a fifth edition in 1850. Lingard's *History* is considered a standard work from the Roman Catholic stand-point.

Linguaglossa, a town of Sicily, on the north-east slope of Etna. Pop. 10,410.

Lingula, a genus of molluscs of the class Brachiopoda and family Lingulidæ, a family that has survived with but little change since the early Silurian period. These mol-

luses are one of the few examples of pedunculated bivalve shells. The members of the genus inhabit the Indian Archipelago and the Australasian seas.

Lin'iment, in medicine, a species of soft ointment of a consistence somewhat thinner than an unguent, but thicker than oil. The term is also applied to spirituous and other stimulating applications for external use.

Link, in land-measuring, a division of Gunter's chain, having a length of 7·92 inches. The chain is divided into 100 links, and is 66 feet in length. 100,000 square links make an imperial acre.

Linköping (lin-cheup'ing), a town of Sweden, capital of the län of East Gottland, in a fertile district on the Stång, near Lake Roxen. The town has a handsome cathedral, a library rich in rare editions of the Bible, episcopal castle, &c. Pop. 1892, 12,968.

Linlith'gow, a royal and parliamentary burgh of Scotland, capital of Linlithgowshire, 17 miles west of Edinburgh, in a hollow along the southern bank of Linlithgow Loch. It consists principally of one irregular street, about 1 mile long, lying east and west. The principal buildings of interest are the palace, now a ruin, where James V. and Mary Queen of Scots were born; and the church of St. Michael, an ancient Gothic edifice. It was in the High Street of Linlithgow that Hamilton of Bothwellhaugh assassinated the Regent Murray in 1570. Pop. 3913.—The county of LINLITHGOW, or WEST LOTHIAN, is bounded by the Firth of Forth, Edinburghshire, Stirling, and Lanark; area, 76,806 acres. This county is one of the richest in Scotland in minerals, including coal, shales, ironstone, freestone, limestone. The soils are generally strong and well drained, but in the south-west parts of the county there is a considerable extent of thin, boggy ground. The principal manufacture is that of paraffin-oil, which is carried on at Bathgate, Uphall, and other places. Principal rivers, Almond and Avon. The county returns one member to parliament, while Linlithgow is part of the Falkirk group of parliamentary burghs, and Queensferry part of the Stirling group. Principal towns, Linlithgow, Bathgate, Borrowstounness, and Queensferry. Pop. 1891, 52,789.

Linnæ'a, a genus of plants of the natural order Caprifoliaceæ (honeysuckles). It contains but one species (*L. boreālis*), a creeping evergreen plant found in woods and in mountainous places in Scotland and other northern countries, including North America

as far south as Maryland, bearing two beautiful drooping fragrant bell-shaped pink flowers on each flower-stalk. The plant was an especial favourite with Linnæus, and was named in honour of him by Gronovius.

Linnæan Society, a society in London, instituted in 1788 by Dr. (afterwards Sir) J. E. Smith, and incorporated in 1802, for the promotion of the study of all departments of botany and zoology. It has an excellent library, a museum, and herbarium, the nucleus of which were formed by the collections of Linnæus himself. Fellows take the initials F.L.S.

Linnæ'us. See next article.

Linné (lin'nā), KARL VON, commonly called LINNÆUS, the greatest botanist of his age, was born at Råshult, Sweden, 1707, and died at Upsala in 1778. He was the son of a clergyman, who had him educated at the grammar-school and the gymnasium of Wexiö. He showed an early interest in botany; entered the University of Lund, where his botanical tastes were encouraged; and removed to Upsala in 1728, where he undertook the supervision of the botanic garden. Here he made the acquaintance of the botanist Rudbeck, whose assistant he became. Aided by the Academy of Sciences at Upsala Linné made a journey through Lapland, the result of which was shown in his *Flora Lapponica*, published 1735. In this year he went to the University of Harderwyk in Holland and took an M.D. degree; afterwards visited Leyden, where he published the first sketch of his *Systema Naturæ* and *Fundamenta Botanica*. In 1736 he visited England, went to Paris in 1738, and afterwards settled in Stockholm as a physician. He became professor of medicine at Upsala in 1741, and then of botany and natural history; was made a knight of the Polar Star with the rank of nobility; and died on his estate near Upsala from apoplexy. The great merit of Linné as a botanist was that he arranged plants on a simple system of sexual relationship and prepared the way for the more natural and satisfactory classification which has superseded the Linnæan system. Nor must it be forgotten that he was eminent not only in botany, but in all the sciences of his time. His chief works besides those already mentioned were:—*Genera Plantarum* (1737), *Classes Plantarum* (1738), *Flora Suecica* (1745), *Fauna Suecica* (1746), *Philosophia Botanica* (1751), and the *Species Plantarum* (1753).

Lin'nell, JOHN, artist, born in London 1792, died 1882. He was a student at the Royal Academy; a pupil of Benjamin West; and the friend of William Blake, whose portrait he painted. His earlier reputation is associated with portraiture, but in his later period his fame became identified with landscape, and more especially the scenery of Surrey. His sons JAMES THOMAS LINNELL and WILLIAM LINNELL are also well-known artists.

Linnet, a small singing bird of the finch family, *Fringilla linōta* or *cannabina*. Its general plumage is brownish, the top of the head and breast being reddish in the breeding season. It is one of the commonest of British birds, everywhere frequenting open heaths and commons, and breeding in the furze and other bushes. They are cheerful and lively birds, and very sweet and pleasing songsters. Called also provincially *Lintie* and *Lintwhite*.

Lino'leum, a preparation of linseed-oil with chloride of sulphur, by which it is rendered solid and useful in many ways. When rolled into sheets it is used as a substitute for india-rubber or gutta-percha; dissolved it is used as a varnish for waterproof textile fabrics, table-covers, felt carpets, and the like; as a paint it is useful both for iron and wood, and for ships' bottoms; as a cement it possesses some of the qualities of glue; vulcanized or rendered hard by heat it may be carved and polished like wood for mouldings, knife-handles, &c.; and mixed with ground cork and pressed upon canvas it forms floor-cloth.

Li'notype, a recently-invented printing-machine, in which types are discarded, and matrices used instead, these being brought to the proper places by touching corresponding keys, the rows of matrices being then automatically filled with molten metal so as to produce solid bars or lines of type, and then automatically returned to their places.

Linseed-oil, the oil got from the seeds of flax either by pressure in the cold or by heating to about 200° Fahr. It is of a pale to dark yellow colour; may or may not have a smell; has specific gravity from 0.928 to 0.94; and remains liquid even at zero Fahr. Linseed-oil is largely used in the arts, for painting, for printer's-ink, &c.; and in medicine, especially for burns. *Linseed-cake* is the solid mass or cake which remains when oil is expressed from flax-seed. It is much used as food for cattle and sheep, and is called also *Oil-cake*.

Linstock, a pointed staff with a crotch or fork at one end to hold a lighted match, formerly used in firing cannon.

Lint, in surgery, is the scrapings of fine linen, used by surgeons in dressing wounds. Lint made up in an oval or orbicular form is called a *pledget*; if in a cylindrical form, or in shape of a date or olive stone, it is called a *dossil*.

Lintel, in architecture, a horizontal piece of timber or stone over a door, window, or other opening, to discharge the superincumbent weight.

Linum, the flax genus of plants, which gives its name to the nat. order Linaceæ. There are about eighty species, herbs or rarely small shrubs, chiefly found in the temperate and warmer extra-tropical regions of both hemispheres. Few are of any importance, except the flax plant (*L. usitatissimum*).

Linz (lints), the capital of Upper Austria, situated on the right bank of the Danube, 98 miles w. of Vienna. It is defended by a circle of detached forts extending over a circuit of 9 miles. It has an old cathedral, a new cathedral, provincial parliament house, castle, town-house, bishop's palace, &c. The manufactures consist chiefly of woollen, linen, silk, and cotton goods, machinery, hardware, &c. There is an extensive trade on the Danube. Pop. 1891, 47,560.

Lion (*Felis leo*), a quadruped of the cat genus, the most majestic of all carnivorous animals, distinguished by its tawny or yellow colour, a full flowing mane in the male,



Head of Gambian Lion (*Felis Leo gambianus*).

and a tufted tail with a sort of sharp nail at the end of it. The largest lions are from 8 to 9 feet in length. The period of gestation is five months; one brood is produced annually, with from two to four at a birth, and the mother nourishes the whelps for

about a year. The mane of the male lion begins to grow when it is three years old; the adult age is reached about six or seven; and the extreme age is about twenty-two, although authorities differ from this estimate. The lion is a native of Africa and parts of Western and Central Asia. He preys chiefly in the night and on live ani-



Head of Maneless Lion (*Felis Leo goofratensis*).

mals, avoiding carrion, unless impelled by intense hunger. He approaches his prey with a stealthy pace, crouching when at a proper distance, when he springs upon it with fearful velocity and force. The whole frame is extremely muscular, the foreparts being particularly so, giving with the large head, flashing eye, and copious mane, a noble appearance to the animal, which has led to his being called the 'king of beasts,' and to fancies of its noble and generous nature which have no real foundation. Of the African lion there are several varieties, as the Barbary lion, Gambian lion, Cape lion. The Asiatic varieties are generally smaller and may want the mane, as the maneless lion of Gujerat. The American lion is the puma (*Felis concolor*).

Lip'ari Islands, a cluster of volcanic islands in the Mediterranean, which take their name from the principal one of the group, about 24 miles from the N. coast of Sicily. Lipari, the largest, is well cultivated, producing figs, grapes, and raisins, sulphur, &c. It is about 15 miles in circumference, and has a population of 7500. On the eastern coast is situated a town of the same name, containing a cathedral; pop. 5000. The other islands are Stromboli, Panaria, Vulcano, Salina, Alicudi, and Filicudi, with two or three smaller ones. Stromboli is an active volcano. Pop. of the group, 17,312.

Lipetzsk, a town of Russia, in the government of Tambov, on the Voronej, on two

elevations, the cathedral being on one. It has much-frequented mineral springs. Pop. 14,239.

Lippe (lip'pè), or incorrectly LIPPE-DETMOLD, a principality of north Germany, bounded chiefly by Rhenish Prussia and Hanover; area, 469 sq. miles. It lies on the Teutoburger Wald, and drains into the Weser, the Ems, and the Rhine. Over half of the surface is arable, more than a fourth under wood. There are some valuable saline springs. The principal towns are Detmold, Lemgo, and Horn. Lippe is a member of the German Empire, and sends one member to the Bundesrath and one to the Reichstag. A very large majority of the inhabitants are Protestants. Pop. 1890, 128,414.

Lippi, FRA FILIPPO, an Italian painter, born in Florence about 1412, died at Spoleto 1469. He was placed in a monastery at Florence, where he studied and showed a great capacity for drawing, and where he painted, it is said, a fresco in one of the cloisters. He left the monastery about 1432, was for some time a slave in Barbary, being set at liberty returned to Italy and painted at Florence, Prato, and finally Spoleto. His most famous paintings are a Coronation of the Virgin, Florence; frescoes on the stories of St. Stephen and John the Baptist in the Duomo of Prato; and a Vision of St. Bernard, in the National Gallery, London.—FILIPINO LIPPI, an Italian painter, and the reputed son of the former, was born at Florence about 1457, and died there 1504. Most of his paintings are to be seen in Florence.

Lippia, a genus of plants, nat. order Verbenaceæ. *L. pseudo-thea*, a native of Brazil, is aromatic and fragrant, and when dried makes an agreeable tea.

Lippstadt, a town of Westphalia, Prussia, in the government of Arnsberg, 24 miles N.N.E. of the city of that name, on the Lippe. Pop. 11,504.

Lipsius, JUSTUS, properly JOEST LIPS, a Flemish scholar, born in 1547, died 1606. He was educated at Brussels, and subsequently at Cologne and Louvain; held positions at Rome, Jena, Cologne, and Louvain; changed from Catholicism to Protestantism and back again; and finally died at Louvain as professor of ancient history. His works were numerous, and he rendered important services to the study of the Latin authors, especially Tacitus, Seneca, Plautus, &c.

Liquation, or ELIQUATION, the process of separating by a regulated heat an easily

LIQUEUR — LISBON.

fusible metal from an alloy in which is a metal difficult of fusion. Thus in the refining of tin to remove slag, iron, copper, and other metals, the ingots are heated in a reverberatory furnace to a temperature just sufficient to melt the tin, which is allowed to run into a basin, while the impurities are left behind on the hearth.

Liqueur (li-keur'; the French name), a palatable spirituous drink composed of water, alcohol, sugar, and an aromatic infusion extracted from fruits, seeds, &c. The best-known liqueurs are absinthe, anisette, chartreuse, curaçoa, maraschino, kummel, and noyau.

Liquid. See *Gas*, *Hydraulics*, *Hydrostatics*, &c.

Liquidam'bar, **LIQUIDAMBER**, a genus of trees of the nat. order Hamamelidaceæ. They are handsome trees, with lobed shining leaves, and catkins or globular heads of monœcious flowers. The fragrant liquid resin called oil of liquidambar and copal balsam is obtained from the *Liquidambar styraciflua*, found in Mexico and the United States. *L. orientale* (oriental liquidambar tree) yields common storax, which is used as a stimulant expectorant.

Liq'uidator, a person appointed to conduct the winding up of the affairs of a firm or company, to bring and defend actions and suits in its name, and do all necessary acts on behalf of the firm or company.

Liq'uorice, a name for herbs of the genus *Glycyrrhiza*, belonging to the nat. order Leguminosæ, and growing in S. Europe, Asia, and Africa. *G. glabra* is a perennial plant with herbaceous stalks and bluish papilionaceous flowers. The well-known liquorice juice, used as a demulcent and expectorant, is extracted from the root as well as from that of others. *Indian liquorice* is *Abrus precatorius*. See *Abrus*.

Lira (from the Latin *libra*, pound), is the name given to an Italian silver coin of the value of about $9\frac{1}{2}d$. English money. It corresponds to the French franc, and is equal to 100 centesimi.

Li'ria, a town of Spain, in the province and 17 miles north-west by west of Valencia, on the left bank of the Guadalaviar. Pop. 8920.

Lirioden'dron, a genus of North American trees belonging to the nat. order Magnolia-

ceæ, and containing only one species, the tulip-tree (*L. tulipifera*). See *Tulip-tree*.

Lisbon (Portuguese, *Lisboa*), the capital and principal seaport of Portugal, on the right bank of the Tagus, about 9 miles above its mouth. It is built on and at the foot of a succession of hills, in the form of an amphitheatre, and the churches, convents, and houses of a dazzling whiteness, have an imposing effect when viewed from the river. The streets of the older parts in general are steep, narrow, crooked, badly paved, and



filthy; but the more modern parts of the town are regular and well built. The chief open space is the Praça do Commercio, a large and handsome square, surrounded by public buildings. The western quarter of the city, called Buenos Ayres, is airy and pleasant, and chiefly occupied by foreigners. The town of Belem, still farther to the west, forms a sort of suburb to Lisbon. Above it stands the royal palace of Ajuda, a conspicuous edifice of white marble. Among the chief buildings are the castle of St. George or citadel, the cathedral, the church do Coração de Jesus, the custom-house and other government buildings on the Praça do Commercio, the town-hall, &c. But the most remarkable specimen of architecture of which Lisbon can boast is the aqueduct which conveys water to the city from springs about $10\frac{1}{2}$ miles distant. The scientific and literary institutions comprise the Royal Academy of Sciences, Polytechnic School, National Museum and Picture-gallery, National Library, containing about 200,000 vols. The harbour is one of the finest in the world, and the quays extend between

2 and 3 miles along the bank of the river. The exports consist chiefly of wine, oil, and fruit; and the principal imports are cotton, cotton tissues, sugar, grain, coal, tobacco, coffee, &c. The manufactures are tobacco, cotton, wool, silk, paper, chemicals, soap, &c. Lisbon is a place of remote antiquity, its earliest name being *Olisipo*. In 1755 it was visited by an earthquake, which threw down a considerable portion of the city, and destroyed above 30,000 of its inhabitants. It was taken by the French in 1807, but resisted an attack by Masséna in 1809. Pop. 246,343.

Lis'burn, a town and former parl. borough of Ireland, in the counties of Antrim and Down, 8 miles south-west from Belfast. It has a cathedral church of the united dioceses of Down, Connor, and Dromore, which contains a monument to Jeremy Taylor, who died here in 1667. Flax spinning and weaving, and the manufacture of thread and muslin, employ the greater number of the inhabitants. Pop. 1891, 9517.

Lisieux (*liz-yeu*), a town of France, department of Calvados, on the Touques, 27 miles E.S.E. of Caen. Its principal edifices are a fine Gothic cathedral of the 12th century, and an episcopal palace. The manufactures consist of muslin, broad-cloth, flannel, &c. Pop. 16,039.

Liskeard (*lis-kärd'*), a municipal (and formerly a parl.) borough of England, county of Cornwall, 18 miles north-west of Plymouth. There are tin, lead, and copper mines in the vicinity. Liskeard ceased to be a parl. borough in 1885. Pop. 4536.

Lismore', an island of Scotland, off the west coast of Argyle, and forming part of that county, at the entrance of Loch Linnhe; area, 15 square miles. In ancient times Lismore was the residence of the bishops of Argyle and the Isles, and the remains of their palace are still seen. Pop. 621.

Lissa, an island belonging to Austria, in the Adriatic, off the coast of Dalmatia; length, 10 miles; breadth, 5 miles. From 1810 to 1815 it was held by the British, who built some fortifications and defeated all the attempts of the French to dislodge them. Pop. 7871.—The town of Lissa, or San Giorgio, on a bay on the north-eastern side of the island, was attacked by the Italian fleet on August 18 and 19, 1866, and on the 20th an engagement took place between the Italian and Austrian fleets, in which the Italians were defeated. Pop. 4317.

Lissa, a town of Prussia, prov. of, and

44 miles S.S.W. of Posen. It has a castle and manufactures woollens, leather, and tobacco. Pop. 12,109.

Lister, SIR JOSEPH, Bart., English surgeon, was born at Upton, Essex, in 1827; became M.B. of London University, and a fellow of the Royal College of Surgeons in 1852. From 1860 to 1869 he was professor of surgery in Glasgow University; from 1869 to 1877 professor of clinical surgery in the University of Edinburgh, being in the last-mentioned year appointed to the corresponding chair in King's College, London. His name is more especially connected with the successful application of the antiseptic treatment in surgery, which inaugurated a new era in this branch of medical science. He received the prize of the Academy of Paris, the medal of the Royal Society; was made an LL.D. of Glasgow University and of Cambridge; D.C.L. of Oxford; and in 1884 was made a baronet. He has published various papers on Surgical Pathology, &c.

Liston, JOHN, comedian, the son of a London watchmaker, born in 1776, died 1846. He made his first appearance at the Haymarket in 1806, transferring his services to Drury Lane in 1823, and attaching himself to Madame Vestris' company at the Olympic from 1831 to 1837. Among his most famous characters were Mawworm in the Hypocrite and Paul Pry.

Liston, ROBERT, a Scottish surgeon, born 1794, died 1847. He studied at Edinburgh College, became one of the house-surgeons at the Royal Infirmary there in 1815; delivered lectures on anatomy and surgery, and in 1833 published his *Principles of Surgery*. The following year he removed to London as surgeon to the North London Hospital, and subsequently became professor of clinical surgery in University College, an office which he retained till his death. He was one of the most eminent surgeons of his time.

Liszt, ABBÉ FRANZ, distinguished pianist and composer, was born in Hungary in 1811, and died in 1886. He made his first public appearance in his ninth year; studied in Vienna and Paris; produced an opera in 1825, and became director of the Court Theatre at Weimar in 1849. This gave him the opportunity to introduce the music of Wagner, Berlioz, Schuman, and the writers of what is known as 'the music of the future.' In 1861 he took up his residence in Rome, where he joined the priesthood.

In 1870 he became director of the Conservatory of Music at Pest. His chief works are the Faust and Dante symphonies, and the oratorios St. Elizabeth and Christus.

Lit'any (from the Greek *litaneia*, supplication), a term generally applied to a series of short prayers or supplications together forming one whole. The term was used by the early church to denote any form of prayer, and it was not until the 5th century that litanies came specifically into use. Litanies became afterwards very common, and every saint of the Roman calendar had his litany. The best-known litany at the present day is that of the Anglican Church.

Litchfield. See *Lichfield*.

Litchfield, Montgomery co., Ill., is a flourishing city, with manufactories, large grain trade, and producing coal. Pop. 5811.

Litchi, or LEE-CHEE (*Dimocarpus* or *Nephelium Litchi*), the fruit of a tree belonging to the natural order Sapindaceæ, a native of the south of China. The tree is of a moderate size, with brown bark, the leaves large, and the fruit is produced in bunches, which are pendant from the extremities of the twigs. The litchi is a red or green berry, about $1\frac{1}{2}$ or 2 inches in diameter, with a tough, thin, leathery coat, and a colourless half-transparent pulp, in the centre of which is a single brown seed. The pulp is slightly sweet, and grateful to the taste.

Lit de Justice (lê dè jûs-tēs; literally 'bed of justice') was formerly a solemn proceeding in France, in which the king, with the princes of the blood royal, the peers, and the officers of the crown, state, and court, proceeded to the parliament, and there, sitting upon the throne (which in the old French language was called *lit*), caused those commands and orders which the parliament did not approve to be registered in his presence. The last lits de justice were held by Louis XVI. in 1787 and 1788.

Literary Property. See *Copyright*.

Lith'arge, the yellow or reddish protoxide of lead partially fused (PbO). It is extensively used in the manufacture of glass, of enamels, of artificial gems, of lead plaster and lead soap, of sugar of lead, white and red lead, and other compounds. See *Lead*.

Lith'ia (Li₂O), the only known oxide of the metal lithium, which was at first found in a mineral called petalite. It is of a white colour, very soluble in water, acrid, caustic, and acts on colours like other alkalies.

Lithic Acid. See *Uric Acid*.

Lith'ium, symbol Li, atomic weight 7, the metallic base of lithia, which base was obtained by Sir H. Davy in the electrolysis of fused lithium chloride. It is of a silver-white lustre, but quickly tarnishes in the air. Lithium may be cut with a knife, but it is scarcely so soft as potassium or sodium; it fuses at 180° C., and takes fire at a somewhat higher temperature. Lithium floats upon rock-oil; it is the lightest of all known solid bodies; sp. gr. 0.5936. It forms salts analogous to those of potassium and sodium. Compounds of lithium are used in pyrotechny on account of the splendid red colour they impart to flame. In medicine the carbonate is employed especially as a solvent for uric acid, to prevent the formation of calculi and to remove it from the system in gout. Effervescing lithia water is sometimes used in place of soda or potash water. Citrate of lithia is also employed. Its therapeutic properties are similar to those of the carbonate.

Lithog'raphy, the art of drawing upon and printing from stone. The facility with which this is accomplished arises from the antagonistic qualities of grease and water. The processes of the art depend on the adhesion to a grained or polished stone of a certain greasy composition which forms the lines of the drawing, &c.; on the power acquired by those parts penetrated by the greasy composition of attracting and becoming covered with a specially prepared ink; on the interposition of water, which prevents the ink adhering to the parts not impregnated with the grease; and on pressure, which transfers to paper the greasy tracings or drawings. It is the invention of Alois Senefelder, a native of Prague (1771-1834). At first the progress of the art was slow; but latterly its developments have been rapid, so that Germany, France, and Great Britain vie with each other in the artistic beauty of their lithographic productions. The materials, instruments, and methods of this art are as follows:—

The *lithographic stones*, first used by Senefelder, have proved to be the most suitable for the purposes of lithography. This stone, which is found in the district of Kellheim, Bavaria, is a species of slaty limestone; its colour in the best quality is pale-yellowish drab, and for printing purposes its thickness must be from $1\frac{1}{2}$ to 4 inches. In preparing stones for the printer they are squared, levelled, ground, and polished.

Lithographic *ink* is made of wax, white soap, tallow, shellac, mastic, and lamp-black. What are called *chalks* are made from much the same materials; these ingredients being subjected to heat until they are fused, poured out on a slab to cool, and then cut into the required sizes.

There are various styles in which drawings on the stone are executed. *Drawing on the smooth stone* is executed with steel pens and sable-hair brushes. The design, &c., is drawn on the stone in reverse, after which it is slightly etched with dilute acid. In *chalk drawing* the surface of the stone is roughed or grained, after which the drawing is traced upon the stone. The tinting or shading follows. When completed the drawing is etched, after which it is put into the hands of the printer for printing. In *engraving on stone* the stone is first prepared with a solution of acid and gum. It is then washed with water, and a dry red or black powder rubbed over it. The drawing is produced by lines scratched through this ground into the stone. These lines are then spread with linseed-oil, and afterwards *charged* with printing ink, from which impressions are taken. *Etching on stone* is in most respects similar to etching on copper. The stone is prepared in the same manner, the biting-in is effected with dilute acetic acid, and the lines filled in with printing-ink. The method of drawing directly on the stone has been largely superseded by the use of prepared paper, both grained and smooth, on which the drawing is executed, and afterwards transferred to the stone. *Tinting and chromolithography* is much practised in the reproduction of works of an artistic character. See *Colour-printing* and also *Photo-Lithography*, under *Photography*.

In the year 1850 steam-power began to supersede manual labour in driving the lithographic press, and afterwards a cylinder machine was introduced, which from time to time has been greatly improved. This machine, running at 500 revolutions in the hour, can produce good work, but for printing fine chalk drawings of large size the hand-press is still preferred. The number of good impressions that can be taken from one drawing or transfer ranges from 500 to 5000; chalk drawings producing few and ink drawings many copies. The drawing or writing can also be preserved good on the stone for any length of time by rolling it with a special kind of ink and covering it with gum mixed with sugar-candy. For similar purposes

zinc has been treated in much the same manner as stone. See *Zincography*.

Lithoph'agi, LITHOPHAGIDÆ, a name applied to bivalve and univalve mollusca, &c., that penetrate stones and masses of corals.

Lithospermum. See *Gromwell*.

Lithot'omy, in surgery, the technical name for the operation popularly called cutting for the stone. As usually performed it consists in cutting through the perineum in front and to the left of the anus, so as to reach and divide the urethra and neck of the bladder where it is surrounded by the prostate gland. A grooved and curved staff is introduced into the bladder first, and then the incision is made in the perineum to reach the bladder, the groove in the staff serving as a guide to the knife. When thus performed, the operation requires seldom more than three minutes, and in favourable cases the wound heals in the course of a month.

Lithot'riety, in surgery, the operation of crushing a stone in the bladder into fragments of such a size that they may be expelled by the urethra. The instrument by which the stone is broken up is introduced in the same manner as a catheter or sound into the bladder, and after catching the stone either crushes, bores, or hammers it to pieces. The instrument, which is called a lithotrite, has two movable blades at the extremity, which are brought together to crush the stone by means of a powerful screw.

Lithua'nia, a region in eastern Europe which formed a grand-duchy in the 11th century; became united to Poland in the 14th century; and at the dismemberment of that kingdom, in 1773-95, was nearly all appropriated by Russia, now forming the governments of Mōbilev, Vitepsk, Minsk, Vilna, and Grodno; area about 100,000 square miles, of which 6700 are in Prussia. The Lithuanians are a race of people closely akin to the Letts. They are fair-haired, blue-eyed, and light-skinned; of mild disposition, and chiefly occupied in agriculture. Their language is akin to the Lettic and Old Prussian, and forms with these the Lithuanian or Lettic branch of the Aryan family of tongues. Their literature consists chiefly of popular songs and hymns, religious works, tales, &c.

Litmus, or LACMUS, a peculiar colouring matter procured from *Rocella tinctoria* and some other lichens. Paper tinged blue by litmus is reddened by the feeblest acids, and hence is used as a test for the presence of

acids; and litmus paper which has been reddened by an acid has its blue colour restored by an alkali.

Litre, the French standard measure of capacity in the decimal system. The litre is a cubic decimetre; that is, a cube, each of the sides of which is 3.937 English inches; it contains 61.028 English cubic inches; the English imperial gallon is equal to fully $4\frac{1}{2}$ litres, or more exactly 4.54345797 litres.

Littleborough, a large and populous village of Lancashire, England, $9\frac{1}{2}$ miles N.E. of Rochdale. The inhabitants are chiefly employed in cotton and woollen manufactories, fire-brick works, and collieries. Pop. 10,878.

Little Christians, a sect of Russian dissenters claiming to be the possessors of a special revelation. Their numbers have rapidly increased.

Little Falls, Herkimer co., N. Y., is the largest cheese market in the U. S.; the town is picturesquely situated. Pop. 8783.

Littlehampton, a maritime town of England, county of Sussex, 18 miles west of Brighton, at the influx of the Arun into the English Channel. It has become a fashionable sea-bathing resort. Pop. 1891, 4452.

Little Rock, a city of the United States, capital of Arkansas, on the right bank of the Arkansas, here navigable, 250 miles from its mouth. It stands on a rocky bluff, rising about 50 feet above the river. It has the usual variety of churches, a state-house, court-house, jail, theatre, military college, &c. Pop. 1890, 25,874.

Littleton, or **LYTTLETON**, **THOMAS**, a celebrated English judge, born at the beginning of the 15th century, died 1481. In 1455 he went the northern circuit as judge of assize, and was in 1466 appointed by Edward IV. one of the judges of the common pleas. His work on Tenures, with the commentary of Coke, passed through a great number of editions, and was at one time the principal authority on real property in England.

Littorina. See *Periwinkle*.

Littre, **MAXIMILIEN-PAUL-ÉMILE**, a French philologist, was born at Paris in 1801, and died there in 1881. He originally studied medicine, then took up philosophy and philology, adopted the positive philosophy of M. Comte, and published works connected with this subject, as well as works connected with medicine, including a translation of Hippocrates. In 1862 he brought out his *Histoire de la Langue Française*. His chief

work, a dictionary of the French language was begun in the following year, and completed with supplements in 1877. It is a monument of erudition and industry, and its success was prompt and complete. In 1871 he became a representative in the National Assembly, in 1875 was named senator for life, and next year was admitted a member of the French Academy.

Littrow, **JOSEPH JOHANN VON**, an Austrian astronomer, born in 1781, died in 1840. He became joint-director of the observatory of Buda, and in 1819 director of the observatory of Vienna. He published numerous books on astronomy, the best known of which are *Die Wunder des Himmels* (1834), and *Theoretische und praktische Astronomie* (1822–26).

Lit'urgy, a special series of prayers, hymns, pieces of Scripture, or other devotional matter, arranged and prescribed for use in worship; or in a narrower sense a prescribed service for the celebration of the eucharist; hence in the R. Catholic Church equivalent to the mass or service contained in the Missal. There are a number of ancient liturgies connected with various places or names of various persons, but there seems to have been no written liturgy earlier than the 5th century. The chief liturgical books in the Roman Catholic Church are the Missal and the Breviary (which see), both in Latin. In 1523 Luther drew up a liturgy, or form of prayer and administration of the sacraments, which in many points differed but little from the mass of the Church of Rome. He did not, however, confine his followers to this form, and hence every country in which Lutheranism prevails has its own liturgy. Calvin prepared no liturgy; but his followers in Geneva, Holland, France, and other places drew up forms of prayer, of which the Genevese and the French are the most important. In England before the Reformation the public service of the church was performed in Latin, and different liturgies were used in different parts of the kingdom. The most celebrated of these were the Breviary and Missal *secundum usum Sarum* (that is, as used at Salisbury), compiled by the Bishop of Salisbury about 1080. The English Book of Common Prayer dates from the reign of Edward VI. (See *Common Prayer*.) It was based on the Roman Breviary. In the portions of Scripture contained in the Prayer Book the authorized version was latterly adopted, except in the Psalms, which are according

to Coverdale's Bible. The liturgy of the Episcopal Church in Scotland is the same as that of the Church of England, except that there is a different communion office, which, however, is used only in some of the Scotch churches. The Kirk of Scotland, or the Scotch Presbyterian Church, has no liturgy, the Directory for the Public Worship of God being only certain general rules for the conduct of public worship. The Book of Common Prayer of the Protestant Episcopal Church in the United States was adopted in 1789 with some minor deviations from the English.

Liutprand, or **LUITPRAND**, historian, prelate, and diplomatist, was born at Pavia about 920, and died at Cremona about 972. From being page of King Hugo of Italy he rose to be chancellor under his successor Berengarius. He was then patronized by the Emperor Otto of Germany and appointed Bishop of Cremona. He was employed as an ambassador on several important missions, and had in this way an excellent opportunity of studying the events of the period. Besides an interesting narrative of a mission to Constantinople, he has left us a *History of Otto*; and his *Antapodosis*, a history of Europe in six books, from 886 to 950. These works are the chief historical authority for that period.

Livadia, the name given under the Turkish rule to Northern Greece.

Livadia, or **LEBADEA**, a town of Greece, 52 miles north-west of Athens. It is poorly built, and consists of narrow, ill-paved streets. Pop. 5000.

Live Oak. See *Oak*.

Liver, the glandular structure, which secretes the bile. This gland is not confined to the Vertebrate animals, all of which—save the *Amphioxus* or lancelet—possess a well-developed liver, but is found in many Invertebrata. In man the liver is part of the alimentary apparatus, and is situated just below the diaphragm on the right side, extending across the middle line of the body towards the left side. Its front border reaches just below the border of the chest when the posture is sitting or standing; but when the person lies down the liver passes slightly up so as to be completely under cover of the ribs, except a small portion which extends beyond the lower end of the breast-bone. From its position it is extremely liable to compression and injury. It is the largest gland in the body, and weighs from 50 to 60 ounces

avoirdupois. In its general form the liver is flat, broad, and thick towards the right side, becoming narrow and thin towards the left side. Its upper surface is convex or arched and fits into the concave surface of the diaphragm, whilst its lower surface is irregularly divided into certain 'lobes,' five in number, and separated by clefts or fissures. These lobes are known as the right, left, *spegelian*, *caudatus* and *quadrate* lobes.

When microscopically examined the entire mass of the liver is found to consist mainly of large many-sided cells containing granular protoplasm. They are arranged in groups or masses, each little mass being called a *lobule*, and each lobule slightly mapped off by connective tissue and containing a mesh-work of blood-vessels and ducts. These blood-vessels are branches of the *portal vein*. This vein receives the blood which has circulated in the stomach and intestines and carries it throughout the entire liver by a net-work of finely subdivided veins. It is from this supply of blood that the bile is secreted. The blood passes off from the liver by the *hepatic vein*, formed by the union of small vessels which begin in the centre of the lobules. The connective tissue of the liver is supplied with arterial blood by the *hepatic artery*. This blood, like that which has entered through the portal vein, is drained off into the hepatic vein. There is, however, another set of vessels which ramify through the liver, namely the *bile ducts*, whose business it is to carry off the bile produced in the gland. These ducts intersect and unite until in the end two channels are formed, one from the right and the other from the left of the liver, which ultimately form one common exit into the small intestine called the *common bile duct*. Thus, when the bile has been secreted by the liver-cells, it is transferred by way of this hepatic duct into the small intestine, where it mingles with the food. When this flow of bile ceases, as it does when intestinal digestion is interrupted, the supply which still continues is stored in the gall-bladder, which forms a kind of reservoir situated under the liver.

The functions of the liver would seem to be, at least, threefold. It serves (1) to secrete from the blood received from the stomach and intestines that amount of bile which is necessary for the purposes of digestion. The bile, however, contains waste matter, which has been separated from the blood. The liver therefore (2) has a direct function

LIVER-FLUKE — LIVERPOOL.

in separating and casting forth the waste impurities of the blood. Further, it appears from recent investigation that (3) the liver secretes a substance which is called *glycogen* or *animal starch*. The use of this substance, which is readily converted into sugar, would seem to be to supply the tissues with material for their energy and heat. The functions of the liver, however, still form the subject of dispute and investigation among physiologists. See *Bile* and *Gall-bladder*.

There are many diseases connected with this important gland. There is *congestion of the liver*, which indicates that the structure is surcharged and choked with blood. This arises from various causes; heart disease, disease of the lungs, or even excess in food or drink will produce congestion. The symptoms are excessive weight, fulness, and a tenderness in the organ, which may be proved by a slight push in the region beyond the breast-bone. *Inflammation of*



St. George's Hall and Lime Street Station, Liverpool.

the liver is frequent in hot countries; is closely connected with dysentery, and its symptoms are similar to those connected with congestion. *Cirrhosis of the liver* or *drunkard's liver* is frequently caused by excessive spirit-drinking—but not necessarily so, as it has been known to occur in children. The symptoms are many and not easily recognized; and the disease may remain for years before a fatal issue. *Fatty degeneration of the liver* occurs when the cells become crowded with globules of oil, and it becomes large and pale. This result usually arises from overfeeding or drinking and want of exercise. See *Jaundice*.

Liver-fluke. See *Distoma*.

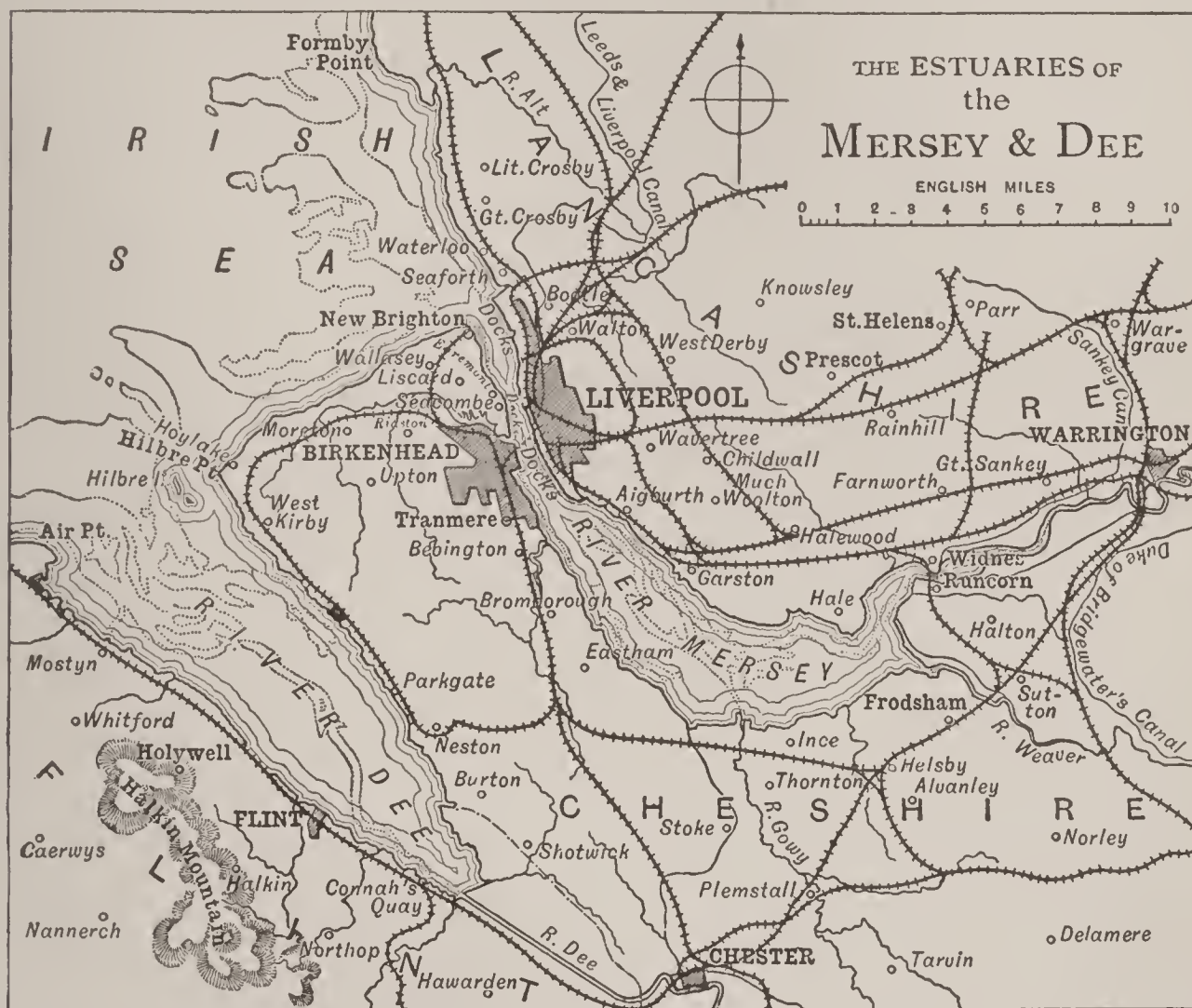
Liverpool, an episcopal city, parliamentary and municipal borough, and seaport of England, county of Lancaster, on the right bank of the Mersey, about 4 miles from its confluence with the Irish Sea, 185 miles north-west from London. Liverpool has

had a rapid and recent growth. Camden speaks of 'Litherpoole commonly called Lirpoole' as the place 'where is the most convenient and most frequented passage to Ireland;' and it was the conquest of that country which gave the first impulse to the trade of Liverpool. Its commerce declined, however, in the 16th century, so that it was mentioned in Queen Elizabeth's reign as 'her majesty's poor decayed town of Liverpool;' and in 1636 it was rated at £20 for ship-money when Bristol was rated at £1000. In 1709 the first wet-dock in the kingdom was erected at Liverpool, and from that time, but more particularly during this century its increase in wealth and influence has been immense. It stands partly on flat ground along the margin of the river, but chiefly on the slopes of a series of moderate eminences. The general appearance of the town has been greatly altered in recent years by the formation of new streets and

LIVERPOOL.

by the widening of many old ones. In the central districts in particular the densely-peopled courts and narrow unhealthy alleys have been opened or demolished. The chief public buildings are the town-hall, municipal offices, revenue buildings, St. George's Hall, exchange, public library and museum, art gallery, Picton reading-room, the Wel-

lington rooms, government offices, and law courts. The town-hall is a Greek building dating from 1754, but greatly altered and extended since. It contains a fine suite of apartments, and serves as the official residence of the mayor. The municipal offices were completed in 1868, at a cost of £160,000. The building is in the Palladian style, and the



central clock-tower and spire, about 200 feet high, is a conspicuous feature in the centre of the town. The revenue buildings form a somewhat heavy structure with four lofty porticoes, each of eight Ionic columns, and the centre is surmounted by a dome. St. George's Hall, completed in 1854 at a cost of £250,000, is a building in the Grecian style, especially notable for the excellence and beauty of its architecture. The free public library and museum—erected at the sole expense of the late Sir William Brown, a Liverpool merchant, and now maintained out of the public rates—is a handsome building of the Corinthian order. One portion is occupied by a reference library of 70,000 volumes, and the other section by the museum. Near the li-

brary and museum another Liverpool citizen, Sir Andrew Barclay Walker, has erected at his sole expense (upwards of £30,000) a gallery of art for the unrestricted use of the people. Between the museum and the art-gallery the town-council has erected a public reading-room, called the Picton reading-room. In connection with the central library there are two lending libraries, one at the north and the other at the south end of the town. The exchange is an edifice of great magnitude, consisting of a centre and two wings, with a frontage of 1500 feet. The provision markets are spacious, airy, covered buildings, and are five in number. There are altogether upwards of 200 places of worship in Liverpool, and

LIVERPOOL — LIVINGSTONE.

many of the churches and chapels are very handsome buildings. When Liverpool was constituted a bishop's see in 1880, the parish church of St. Peter was made the cathedral. The charitable and benevolent institutions, such as hospitals and infirmaries, &c., are numerous. The educational institutions include University College (affiliated to the Victoria University, Manchester), Liverpool College, the Royal Institution, the Liverpool Institute, School of Art and Gallery of Art, &c. The squares and open spaces of the city are not numerous, but it is exceptionally well provided with public parks, and around these many elegant private residences. Sefton Park (400 acres) is the largest. The city is partly supplied with water from the hilly district between Bolton and Blackburn, but an additional and more important supply has been obtained from the Vyrnwy in North Wales. Next to London—if it may be called next—this city is the chief seaport in the United Kingdom, or indeed in the world. The total aggregate of tonnage entered and cleared annually is smaller than at London; but, on the other hand, the foreign trade is greater, the exports in 1888 being valued at £111,220,000, the imports at £97,277,000. Immense docks lie along both sides of the Mersey, with a length of 8 miles, a quay space of 30 miles, and a total water area of over 500 acres (including those of Birkenhead). In connection with the river one of the principal features is the famous floating landing stage, its length of 2063 feet resting upon pontoons, which rise and fall with the tide. The total number of vessels which cleared from the port in 1888 was 17,676, the total tonnage being 8,104,144. Among the imports cotton holds the chief place, followed by provisions and live-stock, cereals, fruits, hides, palm and olive-oil, wine and spirits, tobacco, &c. Cotton goods form by far the principal export; other exports are machinery, woollens, &c. Manufacturing industries are varied, and include engineering, iron- and brass-founding, chemicals, sugar-refining, brewing, rope-making, &c. Liverpool is the chief port in Britain for the departure of emigrants. There are five approaches to the town by railway, and by the opening of the tunnel under the Mersey, the railway facilities have been materially increased. Liverpool is, next to London, the largest town in England. The city is divided into sixteen wards, each of which returns three councillors. Since 1885 the representatives

sent to parliament have been increased from three to nine, the divisions within the city being—Kirkdale, Walton, Everton, West Derby, Scotland, Exchange, Abercromby, East Toxteth, and West Toxteth. Pop. 1891, 517,951.

Liverpool, ROBERT BANKS JENKINSON, EARL OF, born 1770, died 1828. He entered parliament under Pitt's auspices in 1790, and on his father being created Earl of Liverpool in 1796 he became Lord Hawkesbury. As foreign secretary in the Addington ministry he negotiated the treaty of Amiens, and he became home secretary in 1804. On the assassination of Percival in 1812 he became premier, and held that position till 1827. His opposition to all liberal measures, the severity with which he repressed internal disturbances, and his prosecution of Queen Caroline rendered him extremely unpopular.—His father, CHARLES JENKINSON, first EARL OF LIVERPOOL (1729–1808) held several subordinate offices in the government, and was the author of several political pamphlets, a collection of treaties, &c.

Liverpool Plains lie in the northern interior of New South Wales, and were named by Mr. Oxley, the discoverer, in 1818 after Lord Liverpool. They form a pastoral area of over 16,000 square miles.

Liverpool Range, Australia. Its length is about 150 miles, and its highest peak, Mount Oxley, is 4500 feet in height.

Liversedge, a township in the W. Riding of Yorkshire. Pop. 1891, 13,668.

Livingston, EDWARD, statesman, was born in Clermont, N. Y., in 1764. He was sent to Congress, from New York, in 1794, serving until 1801; from Louisiana, from 1822 to 1829, being then elected U. S. Senator. In 1831 he was Secretary of State; in 1833 was Minister to France. In an extended knowledge of law he had probably no superior. He died in 1836.

Livingstone, DAVID, missionary and African traveller, was born at Blantyre, Lanarkshire, 1813, and died near Lake Bangweolo, Africa, 1st May, 1873. His parents had settled in the neighbourhood of the cotton mills near Blantyre, where David became a 'piecer' at the age of ten. While at work in the mill he learned Latin and read extensively, and having attended the medical and Greek classes at Glasgow University during the winter months, he finally became a licentiate of the Faculty of Physicians and Surgeons of Glasgow. Under

the auspices of the London Missionary Society he proceeded in 1840 to South Africa, where he joined Robert Moffat in the missionary field. His first station was in the Bechuana territory, and here his labours for nine years were associated with Mr. Moffat, whose daughter he married. Having heard from the natives that there was a large lake north of the Kalahari desert, he proceeded to explore that region, and discovered the valley of the Zouga and Lake Ngami. Subsequently he penetrated further north-west until he reached Linyanti, the capital of the Makololo territory, situated on the Chobe, a tributary of the Zambesi, which river he also visited. In 1853-56 he made a great exploratory journey, or series of journeys. Starting from Linyanti he ascended the Leeambye (Upper Zambesi), journeyed overland to Lake Dilolo, and thence to St. Paul de Loanda on the west coast. Returning to Linyanti, he struck eastwards from there in 1855, tracing the Zambesi to the Indian Ocean, and reaching Quilimane on the east coast in 1856, having thus crossed the entire continent. The record of this journey is found in his *Missionary Travels and Researches in South Africa* (Lond. 1857). After making various journeys and exploring the Lake Nyassa and Zambesi region, Livingstone set forth in 1865 to set at rest the question of the sources of the Nile. From this time till his death he was engaged in laborious explorations in the lake region of South Africa, especially to the westward of Nyassa and Tanganyika, where he discovered Lakes Bangweolo and Moero, the Upper Congo, &c. For about three years no communication had come from him, and the doubts regarding the traveller's safety were only set at rest when it was known that H. M. Stanley, the special correspondent of the *New York Herald*, had seen and assisted Livingstone at Ujiji, on Lake Tanganyika. They parted in March, 1872, Livingstone going to explore the southern end of Tanganyika, and Stanley proceeding to Zanzibar. After another year's wanderings he was attacked with dysentery near Lake Bangweolo, and there he died. His body was buried in Westminster Abbey, having been conveyed to the coast, rudely preserved in salt, by his faithful followers.

Livingstonia, a mission settlement of the Free Church of Scotland, established in 1875 on Cape MacClear, at the south end of Lake Nyassa, in Southern Africa.

Liv'ius, TITUS, PATAVINUS, often called

LIVY, a celebrated Roman historian, born at Patavium (Padua) in the year 59 B.C. Nothing is known of his life except that he came to Rome, secured the favour of Augustus, and became a person of some consequence at court, that he was married, and had at least two children, and that he died in his native town, according to some authorities, A.D. 11, and to others, A.D. 16 or 17. His Roman history begins at the landing of Æneas in Italy, and comes down to the year of the city 744 (B.C. 9). His whole work consisted of 140 or 142 books, of which we have remaining only the first ten, and those from the twenty-first to the forty-fifth, or the first, third, and fourth decades, and half of the fifth. Of all the books, however, except two, we possess short epitomes or tables of contents. In the first ten books the history extends from the foundation of Rome B.C. 753 to the year 294 B.C.; the portion between the twenty-first and forty-fifth books contains the account of the second Punic war and the history of the city between B.C. 219 and 201. The fourth and the half of the fifth decade bring down the history to the year B.C. 167. Livy makes no pretensions to the character of a critical historian; his grand purpose was to glorify his country, and he adopted all the legends of the early history without troubling his mind about their authenticity.

Liv'ius Androni'cus, the father of Roman poetry, by birth a Greek of Tarentum, and resident in Rome at the beginning of the 3d century B.C. He introduced upon the Roman stage dramas after the Grecian model, and, besides several epic poems, wrote a translation of the *Odyssey* in the old Saturnine verse. We have only a few fragments of his writings.

Livo'nia, or RIGA, a government of Russia, including the island of Oesel, bounded west by the Baltic; area, 17,609 sq. miles. For the most part the country is flat and swampy, yet a great part is under cultivation and yields good crops of oats. The forests are extensive. The governing classes and landed proprietors are chiefly Germans and Russians, while the peasantry are mostly of Finnish and Lettish origin. The inhabitants are almost all Protestants. The capital is Riga. Pop. 1,207,887.

Livre (lê-vr), an old French money of account, not now in use, having been superseded by the franc. The *livre tournois* was worth 20 sous, about 10*d.* sterling; the *livre paris*, 25 sous, about 1*s.*

Livy. See *Livius*.

Lixu'ri, a seaport in Cephalonia, one of the Ionian Islands, a principal depot for wines and currants. Pop. 6000.

Lizard is the popular English name of numerous reptiles forming the order Lacerilia or Sauria, and having usually two pair of limbs and an elongated body terminating in a tail. The lizards number more than a thousand species, accomodating themselves to all conditions except cold, and increasing in size and number in tropical regions. In some the tongue is thick and fleshy and in others it is divided, while in most cases it is protrusible. Some lizards are vegetable feeders, but for the most part they are carnivorous and live upon small birds, insects, &c. The eggs are deposited and left to be hatched without care from the parents. Of the three species found in Great Britain the Common Lizard (*Lacerta vivipara*) is the most widely distributed; the Sand Lizard (*Lacerta agilis*) is confined to portions of England, and the Green Lizard (*Lacerta viridis*) is found in the island of Guernsey. The chief families of lizards are the Scincidæ, or Skinks; the Geckotidæ, or Geckos; the Iguanidæ, or Iguanas; and the Chamæleonidæ or Chameleons. Poison glands are wanting in the lizards; the only exception being the *Heloderma* of Arizona and Mexico, which is capable of inflicting a poisonous bite by means of poison glands connected with grooved teeth.

Lizard Point, a headland of England, in Cornwall, forming the most southern point of Great Britain, 24 miles E.S.E. of Land's End, and having two lighthouses with fixed lights 224 feet above sea-level; lat. 49° 57' 42" N.; lon. 5° 12' W.

Lizard-stone, a name for the serpentine marble stone obtained in Cornwall, in the vicinity of the Lizard Point. It is worked up into chimney-pieces, ornaments, &c.

Llama (là'ma or lyä'mà; *Auchenia*), an ungulate ruminating quadruped found in South America, closely allied to the camel, and included in the family Tylopoda. They differ from the camel in having no hump upon the back, in having a deeper cleft between the toes, the callous pad of the foot is less developed, and the interval between the canine and the back teeth is greater. The tail being short and the hair long and thick, the llama has the general appearance of a long-necked sheep, standing about 3 feet at the shoulder. Of the four known species the guanaco and the vicuña are

found in a wild condition, while the llama and the alpaca have long been domesticated. The llama is used by the inhabitants of Chili and Peru to carry burdens after the



Llama (*Auchenia lama*).

manner of a camel. When loaded with about a hundredweight it can travel some 14 miles a day across the mountain passes. They are gentle and docile creatures.

Llandaff' (*Llan Tâf*, Church of the Tâf), an ancient city of South Wales, Glamorgan-shire; now a mere village, situated on the right bank of the Taff, 2 miles north-west of Cardiff. It is the seat of a bishop, its cathedral dating from the 12th century. Pop. 570.

Llandeilo-beds (lan-dī'lo), in geology, the name of one of the lower Silurian rock groups. See *Geology*.

Llandud'no, coast town and fashionable watering-place in Carnarvon, Wales, on a peninsula between Orme's Bay and the estuary of the Conway. It has a fine parade, promenade pier, and affords excellent sea-bathing. There are interesting antiquities in the neighbourhood. Pop. 1891, 7333.

Llanel'ly, a parliamentary borough of South Wales, in Carmarthenshire, situated on the Bury, 14 miles south by east of Carmarthen. It is the outlet for the products of extensive collieries, iron-foundries, copper, tin, lead, and silver works, in which a large number of the inhabitants are employed. The trade is facilitated by four commodious docks, from which great quan-

tities of coal are exported. It unites with Carmarthen in returning a member to parliament. Pop. 1891, 23,937.

Llango'llen (Welsh pron. *hlân-goth'len*), a town of North Wales, county of Denbigh, 21 miles south-east of Denbigh, picturesquely situated in a narrow valley on the right bank of the Dee, greatly resorted to by summer visitants. Pop. 1891, 3225.

Llanid'loes, a municipal and parliamentary borough of Wales, in Montgomeryshire, on the Severn, 18 miles north-west of Montgomery. It unites with Montgomery and other places to return a member to parliament. Pop. 1891, 2574.

Llanos (*lyä'nōs*), the Spanish name given to the vast plains situated in the north part of South America, particularly in Colombia and the basin of the Orinoco. During the dry season the vegetation is burned up by the sun, while in the rainy period they are flooded with water. Between these two seasons the llanos are covered with thick grass and ranged by vast herds of cattle and horses. Farther south such plains are called *pampas*, and in North America *savannahs*.

Llanquihue (*lyän-kē'wā*), a southern province of Chili, situated between the Andes and the Pacific Ocean. Its area of nearly 8000 square miles is extremely fertile, yielding abundant harvests to its inhabitants, who are mostly Germans; capital, Puerto Montt. Pop. 1891, 74,818.

Llerena (*lye-rā'nà*), a city of Spain, in the province and 57 miles south-east of Badajoz. Pop. 6022.

Llorente (*lyo-ren'tā*), JUAN ANTONIO, a Spanish historian, born in 1756, died in 1823. He received his education at Tarragona, entered the clerical order in 1776, was made a priest (1779), became vicar-general of Calahorra in 1781, and chief-secretary to the Inquisition in 1791. When the Inquisition was suppressed by order of Napoleon and the Cortes, Llorente received many documents connected with it, and published his *Critical History of the Inquisition in Spain* in 1817. Having been exiled from Spain on the return of Ferdinand VII. in 1814, he resided first in England and then in Paris, where he published (1822) his *Portraits Politiques des Papes*, a work which enraged the French clergy, and caused its author to be expelled from France.

Lloyd's, an incorporated society of persons engaged in marine insurance in London, or otherwise connected with shipping, having rooms in the London Royal Exchange.

Members are admitted by subscription, and the affairs of the institution are conducted by a committee. Reports are received daily from all foreign ports, and this information is posted in the common or merchants' room. Besides this, there are other rooms for the use of the underwriters and for ship-auctions, a library, restaurant, &c. Lloyd's List, containing shipping reports, is published daily, and Lloyd's Register of shipping is issued annually. Originally the London underwriters met at Lloyd's Coffee-house, hence the name. See *Insurance*.

Lô, St. (*saṇ lō*), a town of France, capital of the department of La Manche, on the right bank of the Vire, 158 miles west by north of Paris. Pop. 10,121.

Loach, a small fish (*Cobitis barbatūla*) inhabiting small clear streams in England, and esteemed dainty food. A smaller species, the spined loach or groundling (*C. tania*), also occurs in England.—The name is also given to the eel-pout (*Lota vulgaris*) and the three-bearded rockling (*Motella vulgaris*).

Load-line is a line drawn on the side of a ship to indicate that if she is loaded so as to sink deeper she is overloaded. In the Merchant Shipping Act, 1875, power is given to the Board of Trade to see to the marking of the load-line.

Loadstone (Fe_3O_4), an ore of iron, consisting of the protoxide and peroxide in a state of combination, and frequently called the magnetic oxide of iron. It was known to the ancients, and they were acquainted with the singular property which it has of attracting iron. See *Iron*, *Magnet*.

Loam, a soil compounded of various earths, of which the chief are sand, clay, and carbonate of lime or chalk, the clay predominating. Decayed vegetable and animal matter, in the form of humus, is often found in loams in considerable quantities, and the soil is fertile in proportion.

Loan, anything lent or given to another on condition of return or payment. In law loans are considered to be of two kinds—*mutuum* and *commodate*; the former term being applied to the loan of such articles as are consumed in the use, as provisions, or money; the latter to the loan of such articles as must be individually returned to the lender. The acknowledgment of a loan of money may be made by giving a bond, a promissory note, or an I.O.U., the last of which requires no stamp. In England the contract of loan may be proved by the lender's

oath, supported by circumstantial evidence or letters of the borrower.

Loan'da, ST. PAUL DE, a seaport town and island in South-western Africa. The town is a bishop's see, and the chief settlement of the Portuguese in this part of Africa. Principal exports, ivory and bees' - wax. Pop. 12,000.—The island, opposite the town, and separated from the mainland by a narrow channel, is about 18 miles in length and 2 miles in breadth. It contains seven or eight villages.

Loan'go, a maritime country in Africa, stretching northward from the Congo along the Atlantic. The chief products are palm-oil, gum, caoutchouc, coffee, cotton, &c. Neither horses, cows, sheep, nor asses thrive. The population is dense, but barbarous and superstitious. The country now belongs chiefly to France.—**LOANGO**, the chief town, is a collection of huts and factories.

Loan Societies, institutions established for advancing money on loan, and receiving repayment by instalments with interest. In Britain these societies may not advance to one person more than £15, and no second loan can be made until the first is paid. The maximum rate of interest on sums advanced is fixed at 12 per cent per annum. As in the case of friendly societies, officers are appointed by the crown for the control and recognition of loan societies, and copies of the rules must be lodged with them. The property of the society must be vested in trustees for its use, and the treasurer and other officers of the society must give to the trustees security for the discharge of their duties. An abstract of the accounts is to be made up yearly to the 31st December. Many building-societies are a kind of loan societies.

Löbau (*leu'bou*), a town of Germany, kingdom of Saxony, 11 miles south-east of Bautzen. It has manufactures of woollen and linen, &c. Pop. 6977.

Lobe'lia (named after Matthew Lobel, physician and botanist to James I.), a very extensive genus of beautiful herbs, natives of almost all parts of the world, especially of the warmer parts of America, tribe Lobeliaceæ, natural order Campanulaceæ. *L. inflāta* is the Indian tobacco, which is cultivated in North America, and is employed in medicine. The small blue lobelia so popular in gardens is *L. Erinus*, a Cape species. A brilliantly scarlet-flowered species, *L. cardinālis*, is the cardinal-flower. *L. siphilitica*, an American species, possesses

emetic, cathartic, and diuretic properties. Two species are found wild in Britain.

Lobelia'ceæ, a tribe of Campanulaceæ, differing from Campanulaceæ proper in having irregular flowers, and like the Compositæ syngenesious anthers, but otherwise resembling them very nearly.

Lobiped'idæ, a family of aquatic gullatorial birds, including the coots and phalaropes.

Loblolly-bay, the popular name of *Gordonia Lasianthus*, nat. order Linaceæ, an elegant ornamental evergreen tree of the maritime parts of the southern United States, having large and showy white flowers. It grows to the height of 50 or 60 feet.

Loblolly-pine (*Pinus taeda*), an American pine, next to the white pine the loftiest in North America. Its leaves are 6 inches long, united by threes or fours. Its timber is of little value.

Lob-Nor, a salt lake in Central Asia, in Eastern Turkestan, which receives the river Tarim.

Lobos, or SEAL ISLANDS, three islands in the Pacific Ocean, off the coast of Peru, lat. 6° 29' s., lon. 80° 53' w. The largest, called Lobos de Tierra, is 10 miles distant from the mainland, and is about 5 miles long, and 2 miles broad at the widest part. Large quantities of guano have been obtained from these islands.

Lobster, the common name of the macrurous (long-tailed), decapodous (ten-footed), stalk-eyed crustaceans, belonging to the genus *Homārus*. The first pair of ambulatory limbs bear the well-known and formidable lobster-claws. The abdomen has rudimentary limbs on its under side, among which are lodged the newly excluded spawn. The tail consists of several flat shelly plates capable of being spread like a fan, and used as a swimming organ. They inhabit the clearest water, living in the crevices of a rocky bottom. The common lobster (*H. vulgāris*) is found in great abundance on many of the European shores. Lobsters are esteemed a very rich and nourishing aliment, but dangerous unless fresh and in good condition. They are generally in their best season from the middle of October till the beginning of May. *H. americanus*, closely allied to the British lobster, is found on the coasts of North America. The freshwater lobster is the crawfish or crayfish.

Lobworm (*Arenicōla piscatōrum*), a genus of Annelida or Worms. It has a round, obtuse head, a body about the size of a

large earthworm, and respire through thirteen pairs of gill-tufts. Traces of the lobworm may be found on every sea-beach in the little coils of sand which it leaves when burrowing after the tide has ebbed. It is used for bait in deep-sea fishing. It is called also *Lugworm*.

Local Authority is the name applied more especially to the administrators of the Public Health Act of 1875 in districts established under the act as either rural or urban sanitary districts, the local authorities thus including town councils, municipal authorities, improvement commissioners, boards of guardians, &c.

Local Government is the term used to denote the government or management of the various subdivisions of a country, as distinguished from the supreme government. Its function is chiefly administrative and judicial; and it may be carried out by parishes, municipal boroughs, &c. In England and Wales a uniform system of local government was introduced by the Local Government (England and Wales) Act, 1888, based on the direct representation of the inhabitants, a principle already recognized in regard to urban communities. The administrative county, as defined by the act, has been divided into electoral divisions, each returning one member to the county council. The electors of these county councillors, as defined by the County Electors Act, 1888, are those persons who, in the county, possess the burgess qualification in a borough (as required by the Municipal Corporations Act, 1882), or who occupy land to the value of ten pounds. The county councillors thus elected form three-fourths of the council, and the other fourth, called county aldermen, are selected by the council. The chairman is appointed by the council from among their number, and the councillors, after serving three years, retire together. Thus constituted, the council has superseded quartersessions in conducting the administrative and financial business of the county. Its powers and duties are the levying and expending of all county, hundred, police, and other such rates; the borrowing of money for a period not to exceed 30 years; the licensing of race-courses, pawnbrokers, houses for music, dancing, and stage plays; the management of asylums for pauper lunatics; the establishment and maintenance of school reformatories; the purchase and upkeep of bridges and roads; the appointment of a public analyst, a coroner, and a medical officer of health; the

administration of the acts relating to weights and measures, contagious diseases of animals, wild fowl preservation, fish conservancy, explosives, and the pollution of rivers; the certifying of places of worship; and the opposing of bills in parliament. As regards the county police they are now managed by a joint committee of quarter sessions (that is, the justices of peace), and the county council. To defray its expenditure the council receives the proceeds of local taxation, licenses, as collected by the Commissioners of Inland Revenue, as also four-fifths of one-half of the probate duties.

For the purposes of this act the following boroughs are now formed into administrative counties, viz.: Barrow, Bath, Birkenhead, Birmingham, Blackburn, Bolton, Bootle cum Linacre, Bradford, Brighton, Bristol, Burnley, Bury, Canterbury, Cardiff, Chester, Coventry, Croydon, Derby, Devonport, Dudley, Exeter, Gateshead, Gloucester, Great Yarmouth, Halifax, Hanley, Hastings, Huddersfield, Ipswich, Kingston-upon-Hull, Leeds, Leicester, Lincoln, Liverpool, Manchester, Middlesborough, Newcastle-upon-Tyne, Northampton, Norwich, Nottingham, Oldham, Plymouth, Portsmouth, Preston, Reading, Rochdale, Saint Helen's, Salford, Sheffield, Southampton, South Shields, Stockport, Sunderland, Swansea, Walsall, West Bromwich, West Ham, Wigan, Wolverhampton, Worcester, York. By this arrangement the mayor, aldermen, and burgesses of these county boroughs have now, with modifications, the powers of a county council under the act. The modifications are in those clauses which deal with the election and constitution of the council, the appointment of its officers, the joint committee of Quarter Sessions and the Council, and the powers connected with the county and other rates, for these do not apply to the county boroughs. The adjustment of financial matters between the county and borough authorities is arrived at by mutual agreement, or if necessary by reference to the commissioners appointed under the act.

Under this act also, London by itself is erected into an administrative county. The area thus designated (which includes portions of Middlesex, Surrey, and Kent) has a lord-lieutenant, a sheriff, a commission of the peace, and a court of quarter sessions. The number of county councillors for London is to be double the number of the members of parliament for the Metropolitan boroughs; that is, the number of councillors is to be

118, and the number of county aldermen elected by these is to be not more than one-sixth of their number, or 19. To this council the powers, duties, and liabilities of the Metropolitan Board of Works are now transferred, that authority having ceased to exist. It is also provided that the powers, duties, and liabilities of county councils as defined by the act and enumerated above, shall apply to this London county council. Practically, however, the act does not affect the local management of the city of London, while the position and powers of the vestries undergo almost no change.

The provisions for local government have further been extended by the Local Government (Scotland) Act 1889, taking effect from May 1890. By this act a county council is established for the management of the administrative and financial business of each county. The county having been divided into electoral divisions by the Boundary Commission, one councillor is elected for each division; the term of office is three years, and the whole number retire together. To be registered as a county elector is the qualification for election (women excepted), and the electors are the registered parliamentary electors with the addition of women and peers. It is further provided that every burgh (that is, a parliamentary or royal burgh) which contains less than 7000 inhabitants becomes, for the purposes of this act, merged in the county, contributes to its finances, and is entitled to be represented on the County Council, the representatives being elected by the town council from among their own number. The powers and duties conferred on this County Council are those which have been transferred from (1) The Commissioners of Supply, except in such matters as apportioning the incidence of the land tax, the levying of county assessments, prison visiting, police management, lands valuation, division of old valued rent, &c.; (2) The powers and duties of the County Road Trustees; (3) The powers and duties of the Local Authority of the county under the Contagious Diseases (Animals) Acts and the Destructive Insects Act; (4) The whole powers and duties of the Local Authority under the Public Health Acts, with the exception of burghs and police burghs; (5) The administrative powers and duties of the Justices of the Peace of the county in respect of gas metres, explosive substances, weights and measures, habitual drunkards, and lunatic asylums; but otherwise the powers and

duties of the justices are to remain as heretofore. For the purposes of borrowing, for the management of police, and for the undertaking of works involving capital expenditure, a standing joint-committee of equal numbers is appointed by the County Council and the Commissioners of Supply. As regards finance it is provided that after 31st March, 1890, certain duties and local licenses collected by the Commissioners of Inland Revenue, together with eleven-hundredth parts of one-half of the proceeds of the probate duties shall be placed at the disposal of the County Council. The ordinary revenue, however, will be derived from the rates formerly received by the Commissioners of Supply, and by contributions from the burghs affected by the act, but if this fund is found to be insufficient the County Council is empowered to levy additional rates. All receipts of the council from whatever source shall be carried to the county fund, and all payments shall be made, in the first instance, out of that fund. It is also enacted that the debts and liabilities of any authority whose powers and duties are transferred by the act, shall become the debts and liabilities of the County Council. Further, it is provided that certain powers and duties at present vested in the Privy Council, the Secretary of State, the Board of Trade, and the Scotch Education Department, may from time to time be transferred to the County Council by a provisional order of the Secretary of State for Scotland.

Local Government Board, a department of the British government established in 1871, and having under its supervision all matters of local government, public health, relief of the poor, registration of births, deaths, and marriages, &c. The president of the board is a member of the government, who may or may not be in the cabinet. Under the board is a large staff of inspectors, medical officers, clerks, &c.

Local Option, a term applied to the principle by which a certain majority of the inhabitants or ratepayers of a certain locality may decide as to whether any, or how many, shops for the sale of intoxicating liquors shall exist in the locality. A motion embodying this principle has been carried in the House of Commons, but no legislation has yet taken place in this direction. What considerations should determine a locality, who should be the constituents, what should be the majority necessary to vote the abolition of licenses, and whether the trade thus

affected should receive compensation or not, are points not as yet satisfactorily settled. This principle operates in several of the American states.

Local Preachers are a body connected with Methodism, apart from its regular ministry, who are engaged in secular employments, but devote themselves to Sunday preaching. This order of lay preachers, established by Wesley, has had great influence in the development and spread of Methodism.

Locar'no, a small town of Switzerland, formerly one of the three capitals of the Canton Ticino, in a charming but unhealthy locality on Lago Maggiore. Pop. 2645.

Locative Case, in grammar, is the case expressive of locality. Such a case existed originally in all the Aryan languages; in Sanskrit all nouns and pronouns have a locative case.

Lochaber-axe (from *Lochaber*, a district in Inverness-shire), a weapon, consisting of a pole bearing an axe at its upper end, formerly used by the Highlanders of Scotland.

Loches (lōsh), a town of France, dep. of Indre-et-Loire, on the left bank of the Indre, 14 miles south-east of Tours. In its castle several kings of France resided, and Louis XI. used it as a state prison. Pop. 3587.

Loch Katrine. See *Katrine*, *Loch*.

Loch Leven. See *Leven*.

Loch Lomond. See *Lomond*, *Loch*.

Lock (of firearms). See *Musket*, *Revolver*, *Rifle*, &c.

Lock, an inclosure in a canal, with gates at each end, used in raising or lowering boats as they pass from one level to another. When a vessel is descending, water is let into the lock till it is on a level with the higher water, and thus permits the vessel to enter; the upper gates of the lock are then closed, and by the lower gates being gradually opened, the water in the lock falls to the level of the lower water, and the vessel passes out. In ascending the operation is reversed, that is, the vessel enters the lock, the lower gates are closed, and water is admitted by the upper gates, which, as it fills the lock, raises the vessel to the height of the higher water.

Lock, an appliance used for fastening doors, chests, drawers, &c. A good lock is the master-piece in smithery, and requires much art and delicacy in contriving and varying the wards, springs, bolts, and other parts of which it is composed, so as to adjust them to places where they are serviceable, and to

the various occasions of their use. The principle upon which all locks depend is the application of a lever to an interior bolt, by means of a communication from without, so that by means of the latter the lever acts upon the bolt, and moves it in such a manner as to secure the door or lid from being opened by any pull or push from without. The security of locks in general, therefore, depends on the number of impediments that can be interposed between the lever (the key) and the bolt which secures the door, and these impediments are known by the name of *wards* (which slip into corresponding grooves of the key), the number and intricacy of which are supposed to distinguish a reliable lock from one that may be easily picked. See also *Chubb-lock*.

Locke, JOHN, eminent English philosopher, was born at Wrington, in Somersetshire, 1632, and died 1704 at Oates in Essex. He was sent to Westminster School; from there he went to Christ Church, Oxford,



John Locke.

where he took the degrees of B.A. and M.A., and applied himself to the study of medicine. In 1666 Locke made the acquaintance of Lord Ashley, afterwards Earl of Shaftesbury, and held various offices in the patronage of that nobleman. When in 1682 his patron was obliged to retire, for political reasons, to Holland, Locke accompanied him in his exile. Owing to the troubled condition of his country, and the continued triumph of the party which he had opposed, Locke continued to reside abroad. He returned to England at the Revolution, and was appointed commissioner of appeals under the new government. So

early as 1670 Locke had formed the plan of his famous Essay on the Human Understanding, a plan which he had carefully elaborated in his exile, and which he published in its completed form in 1690. It was received with much opposition, notably by the University of Oxford, who resolved to discourage it; but despite this it acquired a great reputation throughout Europe, and was translated into French and Latin. Locke was made a commissioner of trade and plantations in 1695, but retired when unable to perform its duties, and lived with his friend Sir F. Masham until his death. Briefly, it may be stated that the chief purpose of Locke's celebrated Essay was to find the original sources and the scope of human knowledge. The conclusions he arrived at were that there is no such thing as an 'innate idea;' that the human mind is a sheet of white paper prepared to be written upon; that the knowledge thereon written is supplied by experience; and that 'sensation' and 'reflection' are the two sources of all our ideas. Among other works of Locke are three Letters on Toleration; Thoughts concerning Education; Reasonableness of Christianity; two Treatises on Government; Notes upon St. Paul's Epistles to the Galatians, Corinthians, Romans, and Ephesians; and a Treatise on the Conduct of the Understanding.

Lockhart, JOHN GIBSON, author, and editor of the Quarterly Review, was born at Cambusnethan 1794, and died at Abbotsford 1854. He was educated at Glasgow University; gained an exhibition at Baliol College, Oxford; studied for the Scottish bar, but never practised; and began his literary career in 1817 as a contributor to the newly-established Blackwood's Magazine. In 1820 he married the daughter of Sir Walter Scott, and in 1826 succeeded Mr. Gifford as editor of the Quarterly Review, a position which he occupied for twenty-seven years. As the author of the life of Sir Walter Scott he will be remembered.

Lockhaven, Clinton co., Pa., on the Susquehanna R., and Philadelphia and Erie R. R., is the centre of an immense lumber trade; has saw-mills, &c. Pop. 1890, 7358.

Lockport, a flourishing manufacturing town of America, in New York State, near a series of locks on the Erie Canal, 25 miles from Buffalo. Pop. 1890, 16,038.

Lock'yer, JOSEPH NORMAN, F.R.S., English astronomer, born at Rugby in 1836, and educated privately. He entered the War

Office in 1857; became astronomical lecturer at South Kensington, and directed the eclipse expedition to Sicily in 1870, and to India in 1871. He is best known as a popular lecturer on science, and in connection with his discoveries in spectrum analysis. His contributions to literature include Elementary Lessons in Astronomy (1868), Studies in Spectrum Analysis (1872), Solar Physics (1874), Star-gazing (1877), the Chemistry of the Sun (1887), &c.

Locle (lok'l), a town of Switzerland, in the canton and 10 miles W.N.W. of Neuchâtel. It has important manufactures of clocks and watches, and among other institutions a school of watch-making. Pop. 10,464.

Locomotive Engine See *Steam Engine*.

Locomotor Ataxy, is a peculiar disease of the nervous system, deriving its name from the fact that the sufferer from it cannot order the movements of his limbs for definite purposes. The patient requires to guide his feet and legs by means of his sight, and even then the feet are jerked out and brought down in a violent way. This difficulty of movement is called 'want of co-ordination of movement.' The causes of this disease are obscure, its progress usually extends over a number of years, and recovery is rare.

Locris, the name of two portions of ancient Greece, the one on the east opposite the island of Eubœa; the other on the west, on the north side of the Corinthian Gulf. The Locrians played an unimportant part in Greek history; but a city established by them in Southern Italy, in the Bruttian peninsula (or toe of Italy), attained a very flourishing condition.

Locus, in geometry, the line traced out or generated by a point which is constrained to move in accordance with certain determinate conditions; thus, the *locus* of a point moving in a plane, and which must preserve the same uniform distance from a fixed point, is a circle.

Locust, the name of several insects of the order Orthoptera, of which the genus *Locusta* is a type, allied to the grasshoppers and crickets. Their hind-legs are large and powerful, which gives them a great power of leaping. Their mandibles and maxillæ are strong, sharp, and jagged, and their food consists of the leaves and green stalks of plants. They fly well, but are often conveyed by winds where their own powers of flight could not have carried them. The

most celebrated species is the migratory locust (*L. migratoria*). It is about $2\frac{1}{2}$ inches in length, greenish, with brown wing-covers marked with black. Migratory locusts are most usually found in Asia and Africa, where they frequently swarm in countless



Locust (*Locusta migratoria*).

numbers, darkening the air in their excursions, and devouring every blade of the vegetation of the land they light on. They are destructive both in the larval, nymph, and perfect conditions. The Arabs and others use them as food. When dried in the sun they are pounded up and baked into bread, or fried in oil as a delicacy. In America locusts are usually known as 'grasshoppers.' There are two specially destructive species, one of which, *Caloptenus femurrubrum*, is found in Northern New England and Canada; and the other, *Caloptenus spretus*, breeds abundantly west of the Mississippi. In the summer months this latter species commits widespread ravages in Texas, Kansas, and Colorado.

Locust-beans. See *Carob-tree*.

Locust-tree, or ACACIA (*Robinia pseud-acacia*, natural order Leguminosæ), is found in the Eastern States of North America, but grows to its best in Kentucky and Tennessee. There it acquires a girth of 4 feet and a height of 80 feet. The leaves are pinnate, smooth, prickly at the base; the flowers grow in pendulous racemes, white, fragrant, and producing smooth pods. The wood of the locust-tree is highly valued for certain purposes, being close-grained, tough, light, and elastic in the best variety; it is reddish-tinted. It is used for house-work, fences, railway-sleepers, cabinet-making, &c.

Lodge, HENRY CABOT, Congressman and author, was born in Boston, Mass., May 12, 1850. He graduated from Harvard Law School in 1875. Distinguished as a writer on economic, financial, and commercial subjects; is also an industrious and able Representative in Congress from Massachusetts, having served three terms.

Lodge, Thomas, dramatist, was born in Lincolnshire 1555, and died of the plague 1625. He came up to London from Oxford University and entered Lincoln's Inn as a

law student in 1584, and after becoming an actor and a soldier he studied medicine and practised in London. He published his tale of Rosalynde, Euphues' Golden Legacie (1590), which was the source of Shakspeare's As You Like It; the drama of Marius and Sylla (1594); and in conjunction with Greene he wrote a Looking Glasse for London and England (1594).

Lodger is a tenant who holds part of a house in his exclusive possession, while the landlord or his agent holds possession over the house as a whole. What is known as the *lodger franchise* was established under the Representation of the People Acts of 1867 and 1868. By it any male lodger of full age who has occupied rooms for a year continuously previous to the last day of July in any year in the same house, and has paid for such rooms, if unfurnished, a yearly rent of at least £10, or if furnished a rent equivalent to one of £10 or more for unfurnished lodgings, may have himself registered as a voter for that year; but if his right to vote is to continue his claim must be renewed every year. This franchise could originally be held only in boroughs, but the act of 1884 extended it to counties.

Lodi, a town in North Italy, in the province of Milan, in a fertile plain on the right bank of the Adda, 18 miles south-east of Milan. The principal buildings are the cathedral, a Gothic structure of the 12th century, and the Church of the Incoronata. The manufactures consist of majolica, silk, linen, and the great article of trade is Parmesan cheese. Here Napoleon effected the famous passage of the Bridge of Lodi against the Austrians on the 10th of May, 1796. Pop. 18,689.

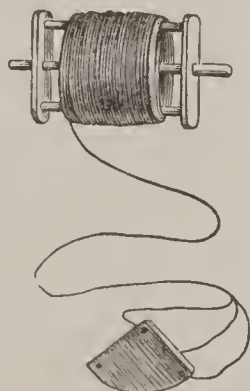
Lodz (Russian, *Lodsi*), a town in Russian Poland, in the government of Piotrkow, 76 miles south-west of Warsaw, and next to it the most populous town in Poland. It has extensive trade and manufactures, especially in woollens and cottons. Pop. 1890, 125,227.

Lo'ess (German pron. leus), a German term applied in geology to a finely comminuted sand or pulverulent loam of a yellowish colour which occurs as a pleistocene alluvial deposit chiefly in the valleys of the Rhine, the Danube, the Missouri, and some other rivers. It consists chiefly of argillaceous matter combined with carbonate of lime, quartzose and micaceous sand.

Lofod'den, or LOFO'TEN, a group of islands off the north-west coast of Norway, and

stretching south-west to north-east about 175 miles. They have almost all bold, precipitous, rugged, and deeply-indented coasts, and an elevated and very sterile interior. The chief value of the group is derived from the immense shoals of cod and herring which frequent them, and the extensive and valuable fisheries which are consequently carried on at the proper seasons, about 4000 boats being employed. The principal cod-fishery ends in April, when the herring-fishery begins and continues during the summer. The celebrated whirlpool, the Maelstrom, is situated at the southern extremity of these islands. Permanent population about 4000.

Log, a contrivance used to measure the rate of a ship's velocity through the water. For this purpose there are several inventions, but the one most generally used is the following, called the *common log*. It is a piece of



Ship's Log.

thin board, forming the quadrant of a circle of about 6 inches radius, and balanced by a small plate of lead nailed on the circular part, so as to swim perpendicularly in the water, with the greater part immersed. One end of a line, called the *log-line*, is fastened to the log, while the other is wound round a reel. When the log is thrown out of the ship while sailing, as soon as it touches the water it ceases to partake of the ship's motion, so that the ship goes on and leaves it behind, while the line is unwound from the reel, so that the length of line unwound in a given time gives the rate of the ship's sailing. This is calculated by knots made on the line at certain distances, while the time is measured by a sand-glass running a certain number of seconds. The length between the knots is so proportioned to the time of the glass that the number of knots unwound while the glass runs down shows the number of nautical miles the ship is sailing per hour. Thus, if the glass be a half-minute one, it will run down 120 times in an hour. Now, since a nautical mile contains about 6076 feet, the 120th part of this is about $50\frac{2}{3}$ feet; so that if the spaces between the knots be $50\frac{2}{3}$ feet, the number of knots and parts of a knot unwound from the reel in half a minute is the number of miles and parts of a mile the ship runs in one hour,

Log. See *Log-book*.

Lo'gan, JOHN, Scottish poet and clergyman, born in 1748, died 1788. His name is now chiefly known in connection with a celebrated Ode to the Cuckoo, declared by Logan to have been written by himself, but which appears rather to have been the work of Michael Bruce (which see).

Logan, JOHN A., statesman and soldier, was born in Jackson co., Ill., in 1823. In the Mexican war he did good service. In 1858 and 1860 was elected to Congress. In the civil war his services were most important, he being engaged in many battles, and being promoted from colonel to commander of a corps. In 1866 he was re-elected to Congress, serving until 1871, when he became U. S. Senator. In 1884 he was Republican candidate for the Vice-Presidency. Gen. Logan was a man of immense force in a legislative body. In debate he was aggressive and effective. He died in 1886.

Logan, SIR WILLIAM EDMOND, a Canadian geologist, born in 1798 at Montreal, educated chiefly in Europe. He devoted himself to the study of the geology of Canada, and was the chief of the Geological Survey of Canada from 1843 to 1871. He assisted also in the geological survey of Britain. He died in 1875 in Wales.

Logania'ceæ, a natural order of tropical dicotyledonous plants.

Logansport, a town of the United States, in Indiana, at the junction of the Wabash and Eel rivers. Pop. 1890, 13,328.

Log'arithms. The common logarithm of a number is the index of the power to which 10 must be raised to be equal to the number. Thus $10^3=1000$, so that the logarithm of 1000 (usually written *log.* 1000) is 3. Now $10^1=10$, $10^2=100$, $10^3=1000$, $10^6=1,000,000$, and it is well known that $10^0=1$, $10^{-1}=0.1$, $10^{-2}=0.01$, &c., thus—

Log. 0.001	= -3	Log.	10=1
Log. 0.01	= -2	Log.	100=2
Log. 0.1	= -1	Log.	1000=3
Log. 1	= 0	Log.	10,000=4

It is evident that the logarithm of any number greater than 1 and less than 10 is fractional; the logarithm of any number greater than 10 and less than 100 is greater than 1 and less than 2. Again, the logarithm of any number less than 1 is negative. Suppose we wish to know the logarithm of the number 18.1. In a book of tables we only find the fractional part of the logarithm, it is .257679. Now 18.1 is

greater than 10 and less than 100, so that its logarithm is greater than 1 and less than 2; hence $\log. 18.1 = 1.257679$. The integral part of a logarithm is called its *characteristic*, the fractional part its *mantissa*. Logarithms make arithmetical computations more easy, for by means of a table of them the operations of multiplication, division, involution or the finding of powers, and evolution or the finding of roots, are changed to those of addition, subtraction, multiplication, and division respectively. For instance, if x and y are the logarithms of any two numbers, the numbers are 10^x and 10^y ; now the product of these numbers is 10^{x+y} , so that the logarithm of the product of two numbers is the sum of the logarithms of the numbers. Again, the quotient of the numbers is 10^{x-y} ; so that the logarithm of the quotient of two numbers is the difference of the logarithms of the numbers. Again, 10^x raised to the n th power is 10^{nx} ; so that the logarithm of the n th power of a number is n times the logarithm of the number. Logarithms of this kind are *common logarithms*, and were invented by Briggs; their *base*, as it is called, is 10. Logarithms were first used by Napier of Merchiston (see *Napier, John*), and he employed a base which is smaller than 10, namely, the number $2.7182818\dots$, or the sum of the infinite series $2 + \frac{1}{2} + \frac{1}{2^2 \cdot 3} + \frac{1}{2^3 \cdot 4} + \&c.$ This base is denoted by e in mathematical treatises, and the *Napierian* logarithm of any number, say 7, is $\log_e 7$, to distinguish it from $\log. 7$, which is the common logarithm, whose base is 10. The common logarithm of a number is found from the Napierian by multiplying by 0.43429448 . Napierian logarithms are of great importance in the higher mathematics.

Log-book, a book kept in ships and into which the direction of the wind, course of the ship, state of the weather at all hours of the day, are daily transcribed at noon, together with every circumstance deserving notice that may happen to the ship or within her cognizance, either at sea or in a harbour, &c.

Loggia (loj'ä), a word used in Italian architecture with several significations. First, it is applied to a hall open on two or more sides, where there are pillars to support the roof, such as the Loggia de' Lanzi in Florence. It is also applied to an open colonnade or arcade surrounding a court, or to an open gallery at the height of one or more stories in a building, as seen in the figure. The name loggia is also given to

the large ornamental window, consisting of several parts, which is often seen in old Venetian palaces; and lastly, it is used to designate a small airy hall, usually open on



Loggia, Palace at Montepulciano.

all sides, constructed on the roof of an edifice.

Logic, a department or division of mental science which has been differently defined by authorities. The older school of logicians agreed on the whole in considering it as mainly treating of reasoning and the operations of mind subsidiary to reasoning; and this definition sufficiently indicates the view of the science held by such logicians as Whately and Hamilton. According to them logic dealt only with the *form* of thought, that is, with what is common to all reasonings, judgments, and concepts respectively, and had nothing to do with the *matter*, that is, the subject or content of reasonings, judgments, &c. In this view the science of logic was merely *deductive*, and the syllogistic process, or the intellectual act performed in deducing particular truths from general truths already given, was the main subject of the science. It is evident, however, that in practical research there is another movement or process of the mind of at least equal importance—viz., the process by which the mind reaches general truths from the observation of particulars. This latter is the *inductive* process, and on it, regarded as the more important element in inference and the ascertainment of truth, John Stuart Mill founded his new system of *inductive logic*. The nature of scientific evidence, the methods and principles involved in scientific research, are the chief subjects of study in this system of logic. Very different from both of these are the conceptions of logic given by the chief German philosophers. Kant, in declaring that only the matter (not the form) of experience was given to the mind, had recognized thought as the essential factor

of cognition, and had initiated a new so-called *transcendental logic*, which was an analysis of the general conditions under which the objective world became cognizable. Thus the foundation was laid for a view of reality as in its very nature constituted by thought. Thought or the *ego* is itself the real, and there being no separate reality logic becomes the system of the forms in and through which thought or intelligence is realized. Logic thus appears, as in Hegel, a complete theory of knowledge and a metaphysic. The earliest work on logic is the *Organon* of Aristotle, who practically gave the science the shape it possesses. See *Deduction, Induction, Fallacy, Syllogism, &c.*

Logograph'ic Printing, a contrivance in printing in which words or parts of words are cast as types instead of single letters. It was tried in the Times printing-office, but was not successful. A simplified system of types, however, consisting of single oft-recurring syllables or parts of words, has been elaborated, but has found as yet no general acceptance.

Logoma'nia, a disease of the faculty of language generally associated with organic disease of the nervous structure, as in paralysis. In this disease, while conceptions and ideas remain clear, the power of associating these with the words by which they are expressed is lost, and the patient can either not give any names to his conceptions at all or expresses them erroneously. Sometimes one class of words is lost and others retained. Thus a patient may forget his own name, or nouns only, and remember all other words. Sometimes he forgets only parts of the word, as terminations, and not unfrequently in another form of the disease he inverts his phrases.

Logos (Greek, word, thought, reason), in Christian theology, a word used in certain passages of the Scriptures, which has been the source of continual disputes ever since the 3d century of our era. The passage in the Bible which gives rise to this discussion is the opening of the Gospel of St. John: 'In the beginning was the Word, and the Word was with God, and the Word was God. The same was in the beginning with God. All things were made by him, and without him was not anything made that was made,' &c. In the Greek text the expression here translated *Word* is *logos*, and the question is, what we are here to understand by *logos*, whether a person of the Deity, the creative intellect of God, or the Son, through whom

he created, or the divine truth which was to be revealed, or something else.

Logroño (lo-grōn'yō), a town in Spain, capital of the province of same name in Old Castile, on the right bank of the Ebro, which is crossed by a new stone and a new iron bridge. It is well built, and has several interesting churches. Pop. 12,298.—The province, in the north, where it borders the Ebro, is level and fertile, but in the south is generally mountainous and barren. It is rich in minerals, but is quite undeveloped in this respect. Area, 1944 sq. miles; pop. 177,973.

Logwood, a popular name for the *Hæmatoxylon campechianum*, a tree belonging to the nat. order Leguminosæ, which grows in moist and swampy places in Central America, and particularly round the Bay of Campeachy; but is now naturalized in Jamaica and many of the West Indian islands. The tree is usually from 40 to 50 feet high, with pinnate leaves and small yellowish flowers. The wood is red in colour, tinged with orange and black, so heavy as to sink in water, and susceptible of receiving a good



Logwood (*Hæmatoxylon campechianum*).

polish. It is used chiefly as a dyewood, the trees being cut down, the bark and alburnum removed, and the hard centre parts cut into 3-foot-long logs. To obtain the colouring matter it is hewn into much smaller pieces, and ground or rasped to small chips, or to a coarse powder. The aqueous extract is muddy and of a reddish-brown colour. By acids the red colour is made paler; by alkalies it is converted to purple. By mordanting the fabric with iron, black is produced; with alumina, violet and lilac; with copper, blue; and with chromium, a black or green. The colouring power of logwood depends chiefly on a crystalline ingredient called hæmatoxylin. It is employed in calico-printing to give a black or brown colour, and also in the preparation of some lakes. An extract of logwood is used in medicine as an astringent.

Loheia, a seaport town of Arabia, Yemen, on the Red Sea, 130 miles w.n.w. of Sana. It has a trade in coffee, and a pop. of about 10,000.

Loh'engrin, the hero of a German poem of the end of the 13th century, represented as the son of Parcival and one of the guardians of the Holy Grail. Sent by King Arthur to help the Princess Elsa of Brabant, he arrives in a vehicle drawn by a swan, delivers the princess from captivity, and marries her; accompanies the emperor in a campaign against the Hungarians, and fights against the Saracens. He then returns to his bride at Cologne, but being pressed by her to state his origin he is prevailed upon to tell it, after which he must, in terms of his vow, return home to the Grail. The legend has been made the subject of a well-known opera by Wagner.

Loir (lwär), a river of N.W. France, rising in dep. Eure-et-Loir, traversing Loir-et-Cher and Sarthe, and falling into the Sarthe a few miles above its junction with the Loire; length, 180 miles, partly navigable.

Loire (lwär; anc. *Liger*), the largest river of France, which it divides into two nearly equal portions. It rises on the western slope of the Cevennes, in the department of Ardèche, and flows generally n.n.w. and w. till it falls into the Bay of Biscay below Nantes. Its principal affluents on the right are the Arroux, Nièvre, Maine, &c.; on the left the Allier, Vienne, Cher, Indre, &c. Below Nantes, where it first feels the influence of the tide, it is more an estuary than a river, and is studded with islets. Above Nantes navigation is much impeded by shallows. Its whole course is about 645 miles, of which about 450 miles are navigable. The river is much subject to disastrous inundations, and dikes (levées) have been constructed along its course. It is connected by canals with the Saône, Seine, and Vilaine. Its name appears in those of a number of departments.

Loire, a central department of France; area, 1837 square miles. The department occupies the upper part of the Loire basin, and consists of the fertile plains which extend on both sides of the river, forming its valley, and long ridges of the Cevennes, which hem the valley in on every side. More than one-half the surface is arable. A good deal of wine is produced, but ranks only as a *vin ordinaire* of good quality. Coals are raised to a large extent, part of the department being in the coal-field of the

Loire, the most important in France. Iron is smelted, and extensively manufactured into steel and articles of hardware, &c., employing 25,000 hands; silk, ribbons, velvet, &c., are also made, the silk manufacture alone employing about 12,000 workers. The capital and great centre of industry is St. Étienne; other towns are Roanne and Montbrison. Pop. 1891, 616,227.

Loire, HAUTE- (ôt-lwâr; Upper Loire), a department of South-eastern France; area, 1915 square miles. It is traversed by the Loire, is surrounded on all sides by lofty mountains, which belong to the Cevennes, and has the character of a plateau intersected by deep river valleys. The mountains are generally covered with forests, in which wild boars, wolves, foxes, deer, &c., abound, or with verdant pastures, on which herds of cattle are reared. Some wine is produced; but the chief industry is the manufacture of various sorts of lace, largely a home industry. Le Puy is the capital. Pop. 1891, 316,735.

Loire-Inférieure (lwâr-an-fâ-ri-eur; Lower Loire), a western maritime department of France, intersected by the lower Loire and its estuary; area, 2653 square miles. The surface is flat. The coast is much indented, and is covered with salt marshes which yield a considerable quantity of salt. Lagoons and lakes are very numerous. The largest is Grandlieu, which has an area of 24 square miles. The soil is generally productive, yielding grain, sugar-beet, and large quantities of wine. The oak forests pasture great numbers of swine. Ship-building and the allied trades are carried on to a considerable extent. Smelting-furnaces, machine-works, sugar-refineries, are also in operation. To these may be added tanneries, glass-works, potteries, paper-mills, &c. Wine, salt, corn, cattle, &c., are exported. The principal ports are Nantes and St. Nazaire. Nantes is the capital. Pop. 643,884.

Loiret (lwä-râ), a central department of France; area, 2614 square miles. The surface is partly flat, partly undulating, with scarcely any hills, and is traversed by the Loire, which divides it into two unequal portions, the northern of which is the larger, and is fertile and well cultivated, while the southern is bleak and sterile. The Loiret is an unimportant tributary of the Loire. The chief products are grain and wine. Pottery and porcelain are the chief manufactures. Orleans is the chief town. Pop. 1891, 377,718.

Loir-et-Cher (lwär-è-shār), a central department of France; area, 2451 square miles. It consists almost entirely of extensive plains, traversed by the Loire, Loir, and Cher, all navigable rivers. The soil is generally fertile. More than one-half of the whole is arable, and less than one-eighth waste. Cereals of all kinds, hemp, beet-root for sugar, wine, fruits, are produced, and horses, cattle, and sheep are reared on excellent pastures. The capital is Blois. Pop. 279,214.

Loja (lō'hā), a city of Ecuador, in the valley of Casibamba, 230 miles s. of Quito, is well built, has a college, some manufactures, and a trade in cinchona bark. Pop. 10,000.

Loja, or **LOXA** (lō'hā), a town in Spain, Andalusia, in the valley of the Genil, 25 miles w.s.w. of Granada. The streets are steep and very irregular, and the houses mostly of mean appearance. The town with its castle was an important military post during the Moorish wars. Pop. 18,429.

Lok, or **LOKI**, in Scandinavian mythology, the evil deity, father of Hel or Hela, goddess of the infernal regions. He is a personification of the principle of evil, described as of handsome appearance, but perpetually engaged in works of wickedness partly directed against the other gods.

Loke'ren, a town of Belgium, in the province of East Flanders, on the Durme, has manufactures of cottons, lace, soap, tobacco, &c. Pop. 18,841.

Lokman', a name that figures in the traditions of the Arabians as that of a sage or prophet. In the Koran there is an account of a Lokman the Wise who lived at a time anterior to that of King David. He is represented as the author of a collection of fables, which, however, are of a later date than the first century of the Hejra.

Loli'go. See *Calamary*.

Lolium, a genus of grasses of the tribe Hordeæ. See *Darnel* and *Rye-grass*.

Lolland. See *Laaland*.

Lollards, a name which arose in the Netherlands about the beginning of the 14th century, and was applied as a term of contempt to various sects or fraternities deemed heretical, being probably derived from the Low German *lollen*, to sing in a low tone. The name became well known in England about the end of the 14th century, when it was applied to the followers of Wickliffe, and to others more or less influenced by his teaching. The Wat Tyler revolt of 1381 was directly connected with Lollar-

dism, and latterly the Lollards drew upon themselves the enmity of the civil powers, and numbers of them were put to death, especially during the reign of Henry V., when apparently another revolt was intended.

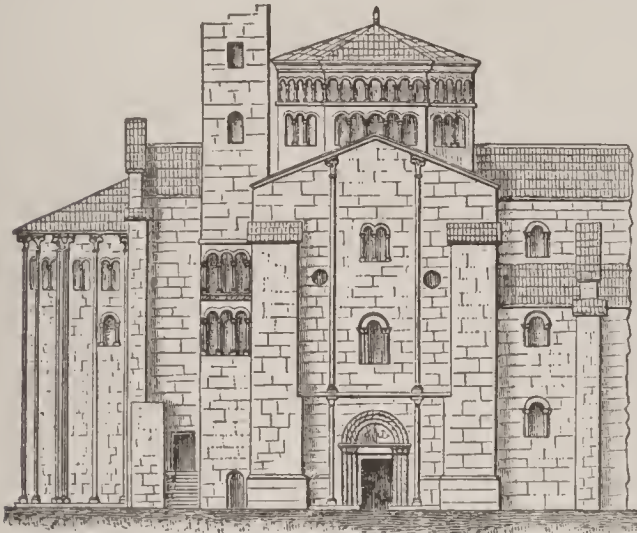
Lollia Pauli'na, a Roman empress who was married to Caligula in 38 A.D., but was soon after discarded and put to death in 49 A.D. at the instigation of Agrippina.

Loma'mi, a river of Southern Africa, an important navigable tributary of the Congo, which it enters a little below Stanley Falls, after flowing nearly parallel to its upper course.

Lombard, **PETER**, or **PETRUS LOMBARDUS**, one of the most celebrated of the schoolmen, born near Novara, in Lombardy, about the year 1100. He was a scholar of Abelard in the University of Paris, became a teacher of theology, and at last, in 1159, bishop of Paris, where he seems to have died in 1164. His work *Sententiarum Libri Quatuor* is a classified collection of the opinions of the fathers on points of doctrine, with a statement of the objections made to them, and the answers given by church authorities. Hence he is known as the Master of Sentences.

Lombard Architecture, the form which the Romanesque style of architecture assumed under the hands of the Gothic invaders and colonists of the north of Italy, comprising the buildings erected from about the beginning of the 9th to the beginning of the 13th century. It forms a connecting link between the romanized architecture of Italy and the Gothic of more northern countries. The most characteristic feature of the churches built in this style is the general introduction and artistic development of the vault, that feature which afterwards became the formative principle of the whole Gothic style. In the Lombard architecture also pillars consisting of several shafts arranged round a central mass, and buttresses of small projection, appear to have been first employed. The tendency to the prevalence of vertical lines throughout the design, instead of the horizontal lines of the classic architecture, is also characteristic, as well as the use of the dome to surmount the intersection of the choir, nave, and transepts. Mr. Fergusson remarks: 'Generally speaking the most beautiful part of a Lombard church is its eastern end. The apse with its gallery, the transepts, and, above all, the dome that almost invariably surmounts their

intersection with the choir, constitute a group which always has a pleasing effect, and is very often highly artistic and beautiful.' As examples of Lombard architecture



Lombard Architecture.

Transept, Apse, and Dome of St Michael, Pavia.

may be mentioned the church of St. Michael, Pavia; San Zenoni, Verona; and the atrium of San Ambrogio, Milan.

Lom'bards, **LONGOBARDI**, or **LANGOBARDI** (so called either from the *long barte* or spear which they carried, or from the *long beards*), a Germanic or Teutonic people who at the beginning of the Christian era were dwelling on the Lower Elbe. They make little appearance in history till the 6th century, when, under their king Alboin, they entered Italy in April 568, and, with the help of Saxons and others, conquered the northern portion, which hence received the name of Lombardy. Alboin was assassinated in 573 (see *Alboin*), and after some years of great confusion Autharis was recognized in 585 as king. He was a warlike and politic ruler, who gained the good-will of the subject Roman population, and instituted a better system of government than had hitherto existed. He married Theodelinde, a Frankish princess, who began the process of converting the Lombards from Arianism to the orthodox faith. The only king of note among the successors of her family was Rothari, who in 643 promulgated a system of laws, which, with subsequent additions, became among German jurists the basis of the study of law during the middle ages. From 713 to 744 the Lombards had a powerful king in the person of Liutprant, who extended his sway, at least temporarily, over the whole of Italy. From that time the power of the Lombards gradually declined,

and finally Charlemagne captured Pavia after a six months' siege, and put an end to the Lombard Kingdom (773 or 774), the last monarch being Desiderius.

Lom'bardy, the part of Upper Italy which took its name from the Lombards (see *Lombards*), and which at first extended from the Adriatic to the Savoyan Alps. After the overthrow of the Lombard Empire a number of independent duchies and republics, Mantua, Milan, Venice, Genoa, &c., were gradually formed, originally as fiefs of the Holy Roman Empire, but soon practically independent. On the west side the growth of the house of Savoy ultimately absorbed all minor principalities to the line of the Ticino, while the extension of the Venetian authority during the 16th century over the districts to the east restricted the use of the name of Lombardy to the country west of the Lago di Garda and the Mincio, a district which passed under the dominion of Austria in 1706, and was ceded by that power to Italy in 1859. Lombardy is now the name of an Italian department (*compartimento*), embracing eight provinces (Bergamo, Brescia, Como, Cremona, Mantua, Milan, Pavia, and Sondrio), containing an area of 9086 square miles and a population (1891) of 3,932,111.

Lombok, an island, belonging to the Dutch, in the Indian Archipelago. It lies between Bali on the west and Sumbawa on the east, and has an area of 2393 square miles. Between the two ranges which traverse the island, one of them rising to the height of 11,500 feet, there is a plain fertile in rice, cotton, maize, coffee, and tobacco. There are several active volcanoes. The fauna and flora have strong Australasian affinities, Lombok being east of Wallace's Line. The ruling class are Brahmans, but the mass of the population is Mohammedan. The capital is Mataram on the west coast. Pop. 405,000.

Loménie de Brienne, **ÉTIENNE CHARLES DE**, count, cardinal, archbishop, and minister of state in France, born in 1727, died in 1794. At the first breaking out of the revolutionary discontents in France, Brienne, then archbishop of Toulouse, was among the most active of the reform agitators, and was ultimately intrusted with the finances, in which he failed ignominiously, and was dismissed in 1788. He was arrested by the revolutionary party, and died in prison.—His brother, **ATHANASE LOUIS MARIE**, born in 1730, entered the army, became a general,

LOMOND — LONDON.

and was made war minister at the same time as his brother was finance minister, retired from office with him, and was guillotined 10th May, 1794.

Lomond, LOCH, a beautiful lake of Scotland, renowned for its scenery, lying within the counties of Stirling and Dumbarton. Its length is about 24 miles; the breadth at the lower or southern end 7 miles, at the upper end considerably under half a mile. The lake is almost entirely surrounded with hills, one of which, Ben Lomond, is 3192 feet high; and its surface is studded with numerous islands. The greatest depth is in the narrower part of the lake, where in some parts it reaches 600 feet. Fish, including salmon, trout, pike, &c., are abundant.

Lom-Palanka, a town of Bulgaria, 22 miles S.E. of Widin, on the Danube, where it is joined by the Lom. Pop. 7000.

Lomza, a town of Russian Poland, capital of the government of the same name, on the Nareff, 80 miles N.E. of Warsaw. Pop. 15,000. The government of Lomza covers an area of 4670 square miles, mostly of a flat and fertile soil. Pop. 1889, 608,683.

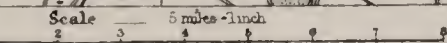
London, the capital of the British Empire and the largest city in the world, is situated in the south-east of England on both sides of the River Thames, which winds through it from west to east. The river is crossed by numerous bridges, and is deep enough to allow large vessels to come up to London Bridge, the lowest of these (except the movable Tower Bridge), being here 266 yards wide. It is difficult to assign any exact limits to London on account of its straggling form and numerous suburban extensions; but it may be said to stretch from east to west about 14 miles, from north to south about 10. Its area may be stated at 75,334 acres, this being the area to which the registrar-general's tables of mortality refer. The population within this area was 3,816,483 in 1881, and 4,211,056 in 1891. Or we may take the somewhat larger area of London as a county under the recent Local Government Act, which also corresponds with the aggregate area of the Metropolitan parliamentary boroughs, viz. 80,126 acres; pop. in 1891, 4,231,431. The area embraced by the Metropolitan and City police districts, including all parishes within 15 miles of Charing Cross—the official centre of the Metropolis—is also spoken of as London: it covers 441,559 acres, or 688 square miles; pop. in 1891, 5,633,332. As regards population London is thus on a level with

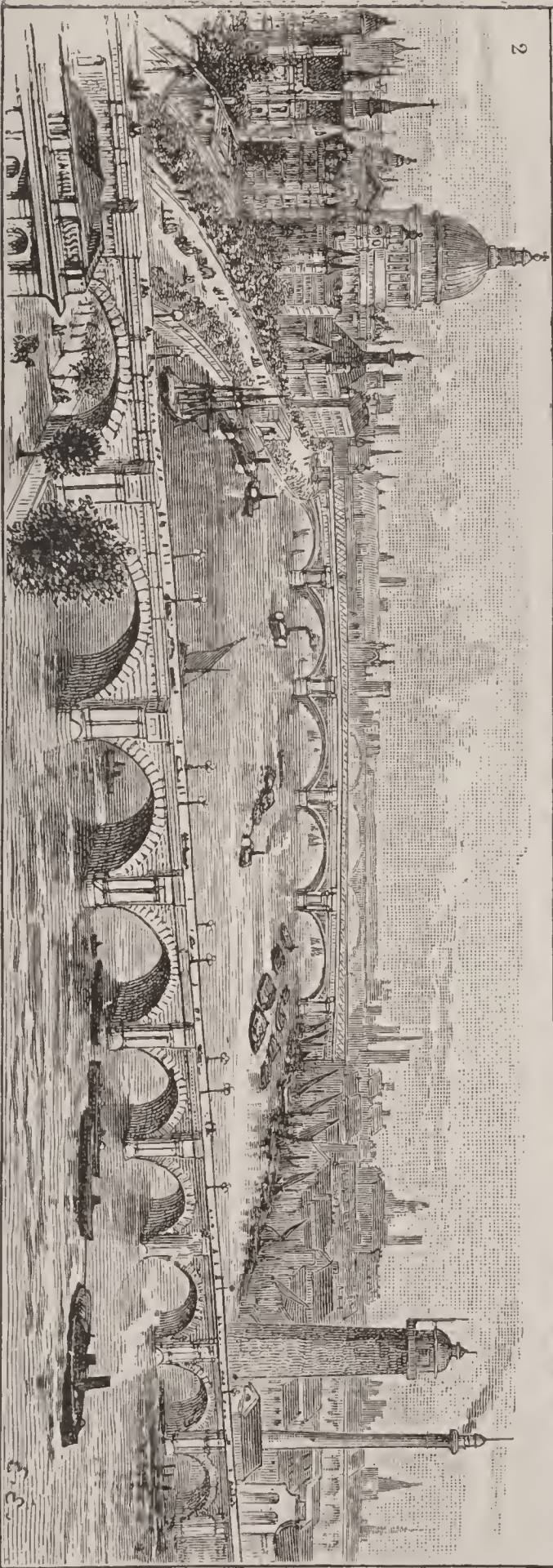
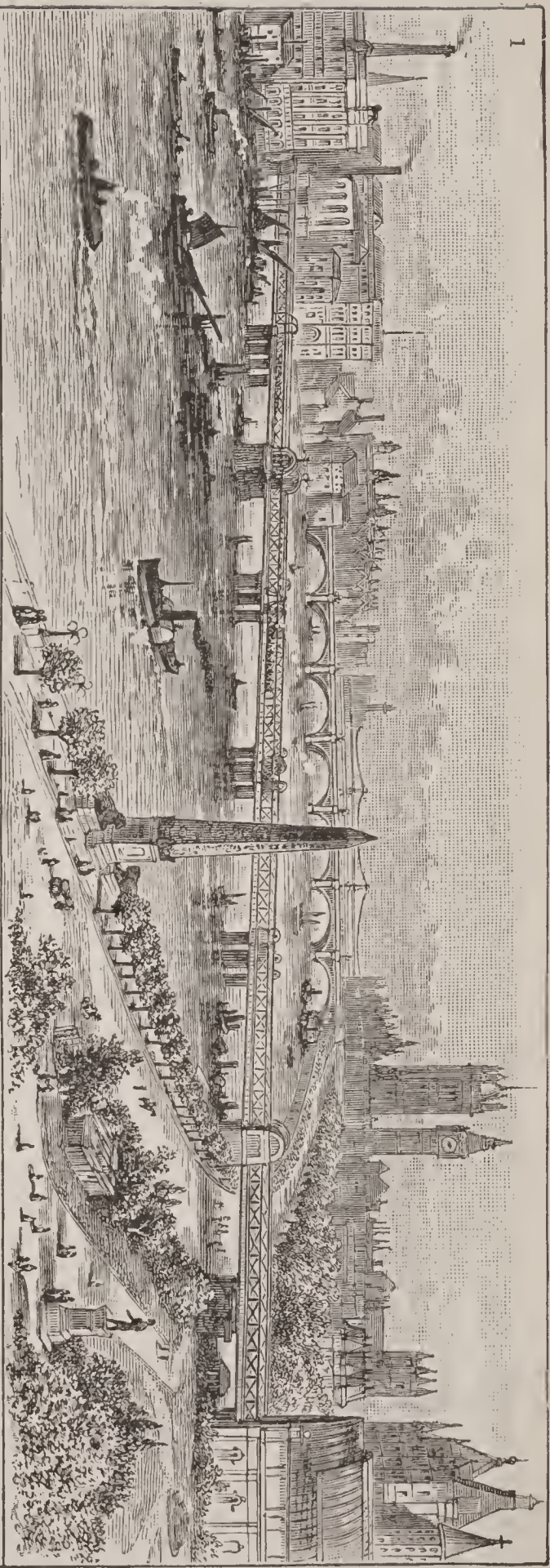
Scotland, Holland, Portugal, or Sweden, and is equal to Denmark and Greece combined. Between 1880 and 1887 the length of new streets added varied from 6 miles to 86 miles annually.

General Features.—The greater portion of London lies on the north side of the Thames, in the counties of Middlesex and Essex, mainly the former, on a site gradually rising from the river, and marked by several inequalities of no great height; on the opposite bank, in the county of Surrey and partly in Kent, the more densely built parts cover an extensive and nearly uniform flat. The City is a separate municipality, having a civic corporation of its own, at its head being the Lord-mayor of London. The City occupies only 668 acres, and has a resident population of 37,504. Westminster, associated with the sovereigns and parliaments for over 800 years, borders with

County of London.	Pop. 1891.
City of London.....	37,504
Marylebone.....	142,381
Pancras.....	234,437
Lambeth.....	275,202
St. George, Hanover Square.....	78,362
Islington.....	319,433
Shoreditch.....	124,009
Paddington.....	117,838
Bethnal Green.....	129,134
Newington (Surrey).....	115,663
Camberwell.....	235,312
St. James, Westminster.....	24,993
Clerkenwell.....	65,885
Chelsea.....	96,272
Kensington.....	166,321
St. Luke, Middlesex.....	42,411
St. George the Martyr, Southwark...	59,712
Bermondsey.....	84,688
St. George in the East.....	45,546
St. Martin in the Fields.....	14,574
Mile End, Old Town.....	107,565
Woolwich.....	40,848
Rotherhithe.....	39,074
Hampstead.....	68,425
Battersea.....	150,458
Whitechapel.....	74,420
Westminste.....	55,525
Greenwich.....	165,417
Wandsworth.....	156,931
Hackney.....	229,531
St. Giles.....	39,778
Holborn.....	33,503
Strand.....	25,107
Fulham.....	188,877
Limehouse.....	57,599
Poplar.....	166,697
St. Saviour.....	27,162
Plumstead.....	88,539
Lewisham.....	92,647
St. Olave.....	12,694
Total, Administrative County of London.....	4,231,431

B





London.—(1) The Thames Embankment, Cleopatra's Needle, Charing Cross and Westminster Bridges, the Houses of Parliament, &c., looking up the river.
 (2) The Thames Embankment, Waterloo Bridge, St. Paul's, &c., looking down the river. Both views from the Savoy Hotel.

LONDON.

the City on the west; while across the river from the City lies the ancient quarter of Southwark, or 'The Borough.' Besides these, London consists of a great number of quarters or districts, the most important of which now form separate parliamentary constituencies, as shown in the accompanying table, though there are many other minor districts, the names of which are also perfectly familiar to the outside world, such as Whitechapel, Spitalfields, Clerkenwell, Pimlico, Bloomsbury, Bermondsey, &c. Another rough division of London is into the West End or fashionable quarter, the residence of the wealthy, and the East End, the great seat of trade and manufactures.

London, on the whole, may be called a well-built city, brick being the material generally employed, though many public and other edifices are built of stone. In some streets the brick fronts are made to imitate stone by being coated with cement. The streets are generally well kept and well paved and lighted, but, except in some of the more recent quarters, the general appearance of London is not attractive, much of the effect of the fine buildings being lost by overcrowding and the want of fitting sites. What generally most strikes a stranger to London is its immense size, which can only be grasped by actually travelling about, or by obtaining a view from some elevation, as Primrose Hill in the north-west, or the dome of St. Paul's Cathedral near the centre, the most conspicuous building in the metropolis. Other striking and also attractive features of London are the parks, especially Hyde Park and Regent's Park, so valuable as breathing spaces; and the handsome and massive stone embankments along the Thames, forming wide roadways and promenades bordered by trees for long distances. As the capital of the British Empire London is from time to time the residence of the sovereign and court. It contains the buildings for the accommodation of parliament and all the great government departments. It is the chief intellectual centre of Britain, if not of the world, and is equally great as a centre of commerce, banking, and finance generally. Many of the institutions and objects of interest noticed in the following paragraphs are also treated in separate articles.

Main Streets, Bridges, &c.—Although in the different districts of London, with the exception of the parts most recently built, there are numerous narrow and crooked streets, yet the whole extent of the metro-

polis is well united by trunk lines of streets in the principal directions, which render it comparatively easy for a stranger to find his way from one district to another. Piccadilly and Pall Mall; the Strand and its continuation Fleet Street; Oxford Street and its continuations, Holborn, Holborn Viaduct, and Cheapside, are among noteworthy streets running east and west; while of those running north and south, Regent Street, perhaps the handsomest street in London, and the location of fashionable shops, is the chief. The Thames embankment on the north or Middlesex side, known as the Victoria Embankment, also forms a magnificent thoroughfare, adorned by important buildings, and at different points with ornamental grounds and statues. A number of magnificent bridges cross the Thames. The lowest is the Tower Bridge, a 'bascul' bridge opening by machinery so as to let ships pass through. The others most remarkable in upward order (exclusive of railway bridges) are London Bridge, 900 feet long, and built of Aberdeen granite; Southwark Bridge, and Blackfriars' Bridge, all connecting the city with Southwark; Waterloo Bridge, 1380 feet long, consisting of nine elliptical arches of Aberdeen granite; Westminster Bridge, an elegant structure of iron, 1200 feet long, crossing the river from Westminster to Lambeth; the Lambeth and Vauxhall bridges, the Chelsea Suspension Bridge, and the Albert Bridge. The two banks of the river are also united by the Thames Tunnel, a tunnel under the river 2 miles below London Bridge, opened in 1843, and intended for pedestrians, but now traversed by a railway.

Parks and Squares.—The chief parks are in the western portion of the metropolis, the largest being Hyde Park and Regent's Park, which, together with St. James's Park and the Green Park, are royal parks. The most fashionable is Hyde Park, containing about 400 acres. It is surrounded by a carriage-drive $2\frac{1}{2}$ miles long, has some fine old trees, large stretches of grass, and contains a handsome sheet of water sadly misnamed the Serpentine River. Kensington Gardens (360 acres), with which Hyde Park communicates at several points, are well wooded and finely laid out. St. James's Park, 83 acres, and the Green Park, 71 acres in extent, adjoin Hyde Park on the south-east. Regent's Park, in the north-west of London, north of Hyde Park, containing the gardens of the Zoological Society and those of the

LONDON.

Royal Botanic Society, covers an area of 470 acres. The Zoological Gardens contain the largest collection in the world. There are, besides, Victoria Park in the north-east of London, Battersea Park in the south-west, West Ham Park in the extreme east, Greenwich Park at Greenwich, &c. Of the squares the most central and noteworthy is Trafalgar Square, with Charing Cross adjoining. Some of the squares are planted with fine trees.

Monuments.—Amongst the public monuments are 'The Monument' on Fish Street Hill, London Bridge, a fluted Doric column 202 feet high, erected in 1677 in commemoration of the great fire of London; the York Column, in Waterloo Place, 124 feet high; the Guards' Memorial (those who fell in the Crimea), same place; the Nelson Column, in Trafalgar Square, 176½ feet high, with four colossal lions by Sir E. Landseer at its base; the national memorial to Prince Albert in Hyde Park, probably one of the finest monuments in Europe, being a Gothic structure 176 feet high, with a colossal statue of the prince seated under a lofty canopy; Cleopatra's Needle on the Thames Embankment; a handsome modern 'cross' at Charing Cross; numerous statues of public men, &c.

Public Buildings.—Among the royal palaces are St. James's, a brick building erected by Henry VIII.; Buckingham Palace, the Queen's London residence, built by George IV.; Marlborough House, the residence of the Prince and Princess of Wales; Kensington Palace, a plain brick building, the birthplace of Queen Victoria. These are all in the west of London. Lambeth Palace, the residence of the Arch-

bishops of Canterbury, is situated on the Surrey side of the river. On the north bank of the Thames stand the Houses of Parliament, a magnificent structure in the Tudor Gothic style, with two lofty towers.



Ludgate Hill and St. Paul's, London.

The buildings cover about 8 acres, and cost £3,000,000. Westminster Hall, adjacent to the Houses of Parliament, a noble old pile built by William Rufus, was formerly the place in which the Supreme Courts of Justice sat, but is now merely a promenade for members of parliament. In and near Whitehall in the same quar-

LONDON.

ter are the government offices, comprising the Foreign, Home, Colonial, and India Offices, the Horse Guards and Admiralty. Somerset House, which contains some of the public offices, is in the Strand. The Post-office in the City occupies two spacious and handsome buildings. Adjoining the City on the east is the Tower, the ancient citadel of London, which occupies an area of 12 acres on the banks of the Thames. The most ancient part is the White Tower, erected about 1078 for William the Conqueror. One of the most important of recent public buildings is the new Law Courts, a Gothic building at the junction of the Strand and Fleet Street. Other noteworthy buildings are the Bank of England; the Royal Exchange; the Mansion House, the official residence of the lord-mayor; the Guildhall, the seat of the municipal government of the city; the four Inns of Court (Inner and Middle Temple, Lincoln's Inn, Gray's Inn); &c.

Churches.—Amongst the churches the chief is St. Paul's Cathedral, completed in 1710 by Sir Christopher Wren. It is situated in the City, occupies the summit of Ludgate Hill, and is a classic building, 510 feet in length, with a dome 400 feet in height. Westminster Abbey, one of the finest specimens of the pointed style in Great Britain, dates from the reign of Henry III. and Edward I. It adjoins the Houses of Parliament, is 531 feet long, including Henry VII.'s chapel, and 203 feet wide at the transepts. Here the kings and queens of England have been crowned, from Edward the Confessor to Queen Victoria. In the south transept are the tombs and monuments of great poets from Chaucer downwards, whence it is called 'Poet's Corner;' and in other parts are numerous sculptured monuments to sovereigns, statesmen, warriors, philosophers, divines, patriots, and eminent individuals generally, many of whom are interred within its walls. Among others of the old churches are St. Bartholomew's in West Smithfield; the Chapel Royal, Savoy; St. Andrew's Undershaft; St. Giles's, Cripplegate; St. Margaret's, Westminster; St. Stephen's, Walbrook; the Temple Church, Bow Church, St. Bride's in Fleet Street. The Roman Catholic Cathedral of St. George's in Southwark may also be mentioned.

Places of Amusement.—These are naturally exceedingly numerous, the theatres alone numbering nearly forty. The principal are:

Covent Garden and Her Majesty's Theatre, the homes of opera; Drury Lane and the Lyceum, identified with the higher drama; the Strand, Criterion, Gaiety, and Toole's, well known for farce and burlesque; the Haymarket, Vaudeville, St. James's and Court for comedy; the Adelphi, Princess's, and Olympic for melodrama; the Savoy, Avenue, and Comedy for opera-bouffe. The chief musical entertainments are given in St. James's Hall and the Concert Hall at the Sydenham Crystal Palace (see *Crystal Palace*). The Albert Hall, Kensington, capable of holding an audience of 8000 persons, is also used for concerts, &c.

Museums, &c.—Amongst museums and galleries the principal is the British Museum, the great national collection, in a very central position as regards the rest of the metropolis. It contains an immense collection of books, manuscripts, engravings, drawings, sculptures, coins, &c. (See *British Museum*.) The South Kensington Museum is a capacious series of buildings containing valuable collections in science and the fine and decorative arts, and there is a branch museum from it in Bethnal Green, in the East End. (See *Kensington Museum*.) The natural history department of the British Museum occupies a fine Romanesque building at South Kensington. The India and the Patent Museums are also at South Kensington, and here is being built the Imperial Institute, partly intended as a museum of home and colonial products. The Soane Museum contains many valuable objects of art, &c. The chief picture-galleries are the National Gallery, in Trafalgar Square, one of the great galleries of the world (see *National Gallery*), the collection in South Kensington Museum, and the National Portrait Gallery. Other museums are the United Service, the Geological, the College of Surgeons, &c. The chief libraries are the British Museum, Lambeth Palace library, the Guildhall library, Sion College library, the London Library, London Institution library, besides large circulating libraries. Many free libraries have recently been established.

Educational and Scientific Institutions.—The chief educational institutions are the University of London, an examining and degree-conferring body only (see *London, University of*); and University College and King's College, the students of which take their degrees at London University, since London has no university that both teaches and confers degrees. Other institutions are

LONDON.

denominational colleges for theology (in some combined with general education); institutions for professional education, as the Royal Naval College, Greenwich; the Royal Military Academy, Woolwich; the Royal School of Mines; the Royal College of Physicians and the Royal College of Surgeons, which grant medical diplomas after examination; the medical schools attached to the various hospitals (see below); Royal Academy of Painting, &c.; Royal Academy of Music; Royal College of Music; Trinity College, chiefly for music; several colleges for ladies; City and Guilds Institute for Technical Education; the Art Training School, South Kensington. The great 'grammar' or secondary schools include St. Paul's School, Merchant Taylors' School, Westminster School, Christ's Hospital, Mercers' School, City of London School, University College School, &c. Elementary education has been under a school board since 1870, and accommodation is now provided for 673,868 scholars. Loans have been advanced to the board for educational purposes amounting to £7,760,000. An institution of a unique kind is the People's Palace for East London, opened in 1887, and designed partly for educational and partly for recreative purposes. Of the numerous societies for the promotion of science, art, learning, &c., we need only mention the Royal Society, the oldest, incorporated by Charles II. in 1663.

Hospitals, &c.—Among hospitals and charitable institutions the chief are the three great endowed hospitals, St. Bartholomew's Hospital, in West Smithfield; Guy's Hospital, Southwark; and St. Thomas's Hospital, Lambeth, on the Thames Embankment opposite the Houses of Parliament. Other hospitals are St. George's Hospital, Middlesex Hospital, Westminster Hospital, Charing Cross Hospital, King's College Hospital, University College Hospital, St. Mary's Hospital. There are medical schools attached to all the above institutions. Bethlehem Hospital (Bedlam), in St. George's Fields, south of the river, is the chief hospital or asylum for lunatics. The Foundling Hospital, Chelsea Hospital, and Greenwich Hospital are institutions by themselves.

Communications, Trade, &c.—About 14,000 licensed carriages, including 7000 hansom cabs, ply on the streets. The London General Omnibus Co. carries about 50,000,000 passengers annually. There are

tramways towards the outskirts; but the narrowness of the streets and the press of traffic exclude them from the busiest districts. Numerous small steamers ply on the Thames, touching at all important points on both sides of the river. All the great railways have termini in London, and their stations correspond with the magnitude of the traffic. There are also lines intended entirely for local traffic, particularly the underground lines of the Metropolitan and District Railways; so that altogether London is provided with a complete network of railways. The principal markets are Billingsgate for fish; Covent Garden for vegetables, flowers, &c.; Leadenhall for poultry, game, &c.; Smithfield for dead meat, poultry, and fish; the Borough market, Southwark. The manufacturing industries of London, though not to be compared with its commercial importance, are extensive. It contains the largest breweries and distilleries in the kingdom; and sugar-refining, manufactures in metal, including plate, jewelry, watches, &c., the making of clothes and of boots and shoes, are extensively carried on. There are large engineering and chemical works. Printing, publishing, and journalism have their chief seat here. London is the greatest centre of commerce in the world. A most extensive trade by sea is carried on between Britain and the Continent, the East Indies and China, Africa, Australia, the West Indies, as well as other parts, and there is an immense coasting trade. The docks are very extensive, comprising numerous basins and their accompanying accommodation on both sides of the river below London Bridge, and having a total water area of over 600 acres. The vessels belonging to the port in 1888 numbered 1242 sailing and 1292 steam; aggregate tonnage, 1,243,298. The foreign and colonial exports from London in 1888 amounted to £87,784,000; the imports to £138,183,465. In 1888 there entered at the port of London 55,081 vessels, with a tonnage of 13,114,901. London is inferior to Liverpool in the value of its exports, but otherwise considerably surpasses it in trade. The customs duties collected annually amount to over £10,500,000. The money passed through the bankers' clearing-house in 1888 amounted to 6942 millions sterling.

Sanitary Condition, &c.—London is one of the healthiest of the large cities of the world, the annual death-rate per 1000 being in recent years about 20·5. The sewerage

LONDON.

system is necessarily gigantic, there being altogether about 250 miles of sewers. There is no single system of water supply, the water being furnished by several companies from the Thames, the Lea, and other sources. The chief supply is that brought by the New River Company established in the time of James I., and obtaining its supplies partly from springs and artesian wells, but mainly from the River Lea at Hertford. These companies have a total capital of about £14,000,000. The water-supply at present is barely sufficient, and the quality of the Lea and Thames water is defective. The gas is also supplied by several companies, their capital amounting to about £13,000,000.

Population.—The population of London has multiplied fivefold since 1801. From 1881 to 1891 it increased at the rate of about 30,000 annually. About one-third of the inhabitants were born outside the limits of London; among these there are natives of all parts of the world. The Irish are said to number more than 250,000, the Scots about half as many, the Germans 60,000 or 70,000, the French 30,000 to 40,000, the Jews 40,000. A birth takes place about once every four minutes.

Civic Administration.—The City of London proper is governed by a lord-mayor, chosen annually, and by twenty-five aldermen, four sheriffs, and two hundred and thirty-two common councilmen. The lord-mayor is elected by the members of the City guilds or companies, known as the liverymen, and numbering about 7000. He receives an allowance of £10,000 a year, which does not usually, however, meet the expenses he incurs. The other districts of London are variously governed. A body known as the Metropolitan Board of Works, created in 1855, took charge of all general improvements, and had the management of all public works in which the ratepayers of the metropolis had a common interest up to 1889, when it was superseded by the London County Council under the Local Government Act of 1888. The administrative county of London comprehends the whole of the metropolitan parliamentary boroughs, which elect 118 county councillors; there being also 19 aldermen (or a number not to exceed one-sixth of the councillors). The City of London is unaffected by this change, except that its sheriffs are no longer sheriffs of Middlesex, and the right of appointing certain judicial officers is transferred from the corporation to the crown. Local paving,

lighting, cleaning, &c., are still managed by vestries and other local boards. The metropolitan police force numbers over 13,000 men exclusive of about 900 for the City proper. The annual ratable value of property is fully £31,000,000.

History.—In the reign of Claudius (41–54 A.D.) the southern part of Britain was made a Roman province, and London became a Roman station. In the time of Constantine, about 306, the Romans fortified and walled it, and it eventually became a great commercial city. After the withdrawal of the Roman legions, London remained for a considerable time in possession of the Britons, but was at length taken by the Saxon invaders, became the capital of the East Saxons, and under Egbert of Wessex (828–837) had the position of capital for all England south of the Forth. In 851 it was taken by the Danes, but was regained by Alfred in 884. Under Cnut and his son Harold many Danish colonists settled in London, contributed largely to the development of its commerce, and practically made it the capital of England. At the Conquest London submitted to William, and received from him a charter, which is still preserved. It also obtained charters from Henry I., Stephen, Richard I., and John. The first mayor was Henry Fitz Alwin, 1189–1212. In 1218 the forest of Middlesex was cleared, and that portion of London north of the City began to be built. In 1285, London having outgrown its water supply, leaden pipes were laid to convey water from Tyburn Brook. In 1349 and 1361 London was visited by the plague. In 1381 much damage was done during Wat Tyler's insurrection. In the 15th century some of the principal streets were paved; the plague or sweating sickness raged in several years of this century. In the 16th century Westminster was connected with the City by a row of noblemen's mansions along the river, the last of which, Northumberland House, recently made way for the Grand Hotel. St. Bartholomew's Hospital and St. Thomas's Hospital were now founded, and theatres began to be an important feature. In the 17th century the metropolis was greatly extended. The New River was completed, and many houses were supplied with water; sewers were dug; pavements were laid down for passengers; and hackney-coaches came into general use. But the streets were so narrow and dirty, and the houses in so filthy a state, that the city was scarcely ever exempt

from the plague, which sometimes committed great ravages, the great plague, which lasted from December, 1664, to January, 1666, carrying off about 69,000 persons. In 1666 the great fire broke out, and spread over 336 acres, destroying 13,200 houses, ninety churches, and many public buildings. Population and trade now rapidly increased, partly from the immigration of French Protestants driven from their country by the revocation of the Edict of Nantes. In the 18th century the metropolis steadily advanced in extent, prosperity, and splendour. After the accession of George II. in 1727 two new bridges, Blackfriars' and Westminster, were added to the single bridge which at that time spanned the Thames in the metropolis. In the middle of the century the population was about 600,000. In 1759 the British Museum, founded on Sir Hans Sloane's collections purchased by the government, was opened. About this time the houses began to be numbered and the names of streets marked at the corners. In 1781 the Gordon riots took place, when the mob were in possession of London for two days, and committed great havoc. In 1807 gaslight was introduced in the streets. In 1812 the extension of the metropolis about Regent's Park commenced, and an act for the formation of Regent Street was obtained in 1813. In 1817 Waterloo Bridge was opened, in 1819 Southwark Bridge. In 1831 new London Bridge was opened. In 1834 the old Houses of Parliament were burned down; the present buildings were begun in 1840. In 1851 the great international exhibition was held in Hyde Park, and led to numerous exhibitions of a similar kind. Since then the history of London has been a story of continued growth and progress, the most notable improvements being the formation of the Thames Embankments, the Holborn Viaduct, and the increasing use of stone in building.

London, a town of Canada, the capital of Middlesex county, Ontario, on the Thames and the Great Western Railway, 121 miles west of Toronto. It was first laid out in 1825, and is well and regularly built, with some handsome public buildings, among which are the city-hall, court-houses, Western University, Hellmuth Ladies' College, and other colleges. There are extensive oil-refining works, iron-foundries, chemical works, and other manufacturing establishments. It is the centre of a fine agricultural region, and carries on an active trade

in wheat and agricultural produce. Pop. in 1891, 31,977.

London, UNIVERSITY OF, was originally established as a joint-stock undertaking in 1825. In 1836 two charters were granted, one to a university retaining the name of London University, and having power to examine and grant degrees, another to a teaching body occupying the original premises at Gower Street, which took the name of University College, and now prepares students for obtaining the degrees conferred by the university. New and supplementary charters were granted in 1858, 1863, and 1878, the last admitting women to all degrees and prizes granted by the university. The university corporation, whose seat is in Burlington Gardens, consists of a chancellor, vice-chancellor, fellows, and graduates. The fellows are thirty-six in number, appointed by the crown or the senate, which consists of the chancellor, vice-chancellor, and fellows. The senate is the governing body, and has charge of the property. The university admits as candidates for examination any person who is above sixteen years of age, and confers degrees in all departments of knowledge except theology, including the degrees of Bachelor, Master, and Doctor, in Arts (or Literature), and Bachelor and Doctor in Laws, Science, Medicine, and Music. Provincial examinations are carried on simultaneously with the London ones in a number of different towns. The university sends a representative to parliament.

London-clay, the most important of the Eocene tertiary formations of Great Britain, largely developed in the valley of the Thames under and around the metropolis. This formation consists of a bluish or brownish clay containing layers of argillaceous nodular limestone. The shells, fruits, &c., found in the London-clay mostly belong to genera now inhabiting warmer seas than those of Britain.

Londonderry, a city and seaport in the north of Ireland, capital of the county of the same name, on the river Foyle, which is here crossed by an iron bridge 1200 feet long, and erected at an expense of £80,000. The city stands partly on a hill crowned with the Protestant cathedral, and still retains its old walls, though the buildings now stretch far beyond them. There is also a handsome R. Catholic cathedral. The chief educational institution is Magee College, which gives courses in arts and theology, the latter specially adapted for Presbyterian students.

The harbour is commodious, and vessels of large tonnage can discharge at the town. An extensive trade is carried on, linen is manufactured, and there are shirt-factories, timber-mills, grain-mills, foundries, distilleries, &c. Derry took origin in a monastic establishment erected by Columba in 546. The corporation of London, who obtained a grant of the town from James I., fortified it, and gave it the name of Londonderry. Here the Protestants of Ulster took refuge at the Revolution, and made a famous defence against the forces of James II., the siege lasting from 21st April till the 1st August, 1689. Londonderry sends one member to parliament. Pop. 32,893. — The county is bounded on the north by Lough Foyle and the Atlantic Ocean, elsewhere by Tyrone, Lough Neagh, and Antrim; area, 522,315 acres. It is very diversified in surface, consisting partly of wild and bleak tracts of mountain and moor, partly of flat alluvial lands. The principal rivers are the Foyle, the Faughan, the Roe, the Bann, and the Moyola. The fisheries are important. The staple manufacture is linen. The county returns two members to parliament. The city of Londonderry is the only parliamentary borough; Coleraine is the next town in size. A great part of the county belongs to several London livery companies, having been granted to them by James I. in 1609, after the flight of the Earls of Tyrone and O'Donnell. Pop. 1891, 151,666.

Londonderry, ROBERT STEWART, SECOND MARQUIS OF, British statesman, born in county Down 1769. In 1796 he became Lord Castlereagh, and, being a member of the Irish parliament, next year he was made keeper of the privy-seal for that kingdom, and the year after chief secretary to the lord-lieutenant. After the Union he sat in parliament as member for Down, and in 1802 was made president of the Board of Control. In 1805 he was appointed secretary of war and the colonies; but on the death of Pitt he retired until the dissolution of the brief administration of 1806 restored him to the same situation in 1807; and he held his office until the failure of the expedition to Walcheren, advocated by him, and his duel with his colleague, Canning, produced his resignation. In 1812 he became foreign secretary, and he was a member of the Congress of Vienna in 1814. He became very unpopular through his conduct on this occasion and his support of the Holy Alliance; and the responsibilities which he had

to assume as virtual prime-minister in connection with repressive measures for the protection of order, and the fatigues of an arduous session, seem to have unhinged his mind, leading him to commit suicide in 1822. He had succeeded his father the year before as Marquis of Londonderry.

London-pride (*Saxifraga umbrōsa*), a perennial evergreen plant of the saxifrage order common in Britain. It has flower-stems 6 to 12 inches high, with small spotted pink flowers. It is also known by the name of None-so-pretty, and in Ireland as St. Patrick's Cabbage.

Long, EDWIN, an English artist, born in 1839, who has acquired a high reputation as a painter of historical scenes from Eastern history. Amongst his more important works we may mention, Babylonian Marriage Market (1875), An Egyptian Feast (1877), Gods and their Makers (1878), Esther and Vashti (1879), Why Tarry the Wheels of his Chariots (1882); Judith, Thisbe, Anno Domini (1884); Callista the Image Maker (1887). Mr. Long has also been successful in portraiture. He was elected a member of the Royal Academy in 1882. Died in 1891.

Long, GEORGE, English scholar, born 1800, died 1879. He was educated at Cambridge, became professor of ancient languages in the University of Virginia in 1824; professor of Greek in the University of London in 1828, but resigned in 1831; professor of Latin at University College in 1842-46; classical lecturer at Brighton College 1849-71. He was one of the founders of the Royal Geographical Society, and did much work in connection with the Society for the Diffusion of Useful Knowledge, including the editing of the Penny Cyclopædia. He contributed largely to Smith's Dictionaries of Greek and Roman Antiquities, Biography, and Geography. Amongst his works are a translation of Select Lives from Plutarch (1844), a Classical Atlas (1854), The Decline of the Roman Republic (1864-74). He was also general editor of the Bibliotheca Classica, to which he contributed a valuable edition of Cicero's Orations.

Long, LOCH, a narrow picturesque arm of the sea, in Scotland, stretching with a slight curve north and north-east from the Firth of Clyde for about 16 miles between the counties of Argyle and Dumbarton.

Longan, an evergreen Eastern tree (*Nephelium Longanum*), a native of the south of China, yielding a delicious fruit. It is of the same genus with the litchi, but its fruit

is brown and smaller, being about $1\frac{1}{4}$ inch in diameter. It is grown to some extent in European hothouses.

Long-boat, a largeship's boat, carvel built, from 32 to 40 feet long, having a beam from .29 to .25 of its length.

Long-bow. See *Bow*.

Long Branch, a fashionable watering-place in New Jersey, United States, 36 miles south of New York. It has wide avenues with numerous hotels, boarding-houses, and cottages. The permanent population is 7231, but during summer is sometimes increased by 30,000.

Longevity, a term which is used both for average or probable duration of life in a community, or for great length of life reached by particular individuals. For Britain the figures given in the life table exhibiting the combined experience of seventeen assurance offices, may be taken as a fair indication of the facts. According to their experience a person at the age of 10 years has an average expectation of living 48.36 years longer; at 20 years 41.49 years longer; at 30 years 34.43 years longer; at 40 years 27.28 years longer; at 50 years 20.18 years longer; at 60 years 13.77 years longer; at 70 years 8.54 years longer; at 80 years 4.78 years longer; at 90 years 2.11 years longer. When the sexes are considered separately the average duration of life is somewhat higher in women than in men. The question of the extreme limit to which human life may possibly attain is also of great interest. Ordinary observation leads to the conclusion that a comparatively small number of men reach the age of 70, a very much diminished number attain to 80, while 90 is rare. There are, however, well-authenticated cases of persons who have reached 100 years, and even a few years more; but such cases as that of Thomas Parr, said to have been 152 years old, and Henry Jenkins, said to have been 169, rest on mere unreliable assertion.

Longfellow, HENRY WADSWORTH, American poet, was born at Portland, Maine, 1807; died 1882. He entered Bowdoin College at fourteen years of age (1821) and graduated in 1825. While at college he distinguished himself in the study of modern languages, and published some short poems, amongst which was the Hymn to the Moravian Nuns. In 1826 he accepted the professorship of modern languages at Bowdoin, being allowed three years to prepare himself for the post by study and travel in

Europe. In 1833 he published a volume of translations from Coplas de Manrique, with an essay on the Moral and Devotional Poetry of Spain; in 1835 appeared *Outre Mer*, a volume of prose sketches, and in the same year he was elected to the chair of modern languages and literature in Harvard University. After spending another year in Europe, studying Scandinavian languages and literature, he entered on his professorship in 1836. In 1839 he published *Hyperion*, a Romance, and *Voices of the Night*, a series of poems. Ballads and other Poems and a small volume of Poems on Slavery appeared in 1842; the *Spanish Student*, a drama in three acts, in 1843; the *Belfry of Bruges* in 1846; *Evangeline* in 1847. In 1845 he published a volume—*The Poets and Poetry of Europe*, containing translations by himself and others from about three hundred and sixty authors, Danish, Swedish, Dutch, German, French, Italian, Spanish, Portuguese, Anglo-Saxon, and Icelandic, with much valuable information respecting the writers. In 1849 he published *Kavanagh*, a tale in idyllic prose; in 1850 the *Seaside and the Fireside*; in 1851 *The Golden Legend*; in 1855 *Hiawatha*; in 1858 the *Courtship of Miles Standish*; in 1863 *Tales of a Wayside Inn*; in 1866 *Flower de Luce*; in 1867–70 an excellent poetical translation of Dante; in 1869 *New England Tragedies*; in 1871 the *Divine Tragedy*; in 1872 *Three Books of Song*; in 1874 the *Hanging of the Crane*; in 1875 *Morituri Salutamus* and the *Masque of Pandora*; and in 1878 *Keramos*. He resigned his chair at Harvard in 1854. In 1868–69 he again travelled in Europe, and received the degree of LL.D. and D.C.L. from the Universities of Cambridge and Oxford respectively. His poems are equally popular on both sides of the Atlantic.

Longford, an inland county of Ireland, in the province of Leinster, bounded on the west by the Shannon and Lough Ree; area, 269,409 acres. The surface is mostly flat, and bogs are numerous and extensive, especially around Lough Ree and in the west, but a great portion of the south consists of rich soil suitable for growing all kinds of grain and green crops. Grazing and dairy farming are the principal pursuits. By means of the Royal Canal and the Shannon, the county has water communication with Dublin and Limerick. It returns two members to parliament. Chief towns, Longford, Granard, and Ardagh. Pop. 52,553.

LONGICORN BEETLES — LONGITUDE.

—The county town, Longford, stands on the left bank of the Camlin, 70 miles north-west of Dublin. It contains a county courthouse, prison, barracks, corn-mills, tan-yards, &c. Pop. 4380.

Longicorn Beetles, a family of Coleoptera, including a vast number of large and beautiful beetles, all remarkable for the length



Longicorn Beetle (*Cerambyx heros*).

of their antennæ, which, in the males of some of the species, are several times longer than their bodies. The females deposit their eggs beneath the bark of trees by means of a long, tubular, horny ovipositor, and the larvæ are very destructive to wood.

Longinus, DIONYSIUS, or CASSIUS, a Greek writer, born about A.D. 213, according to some at Athens, according to others at Emesa or Palmyra. He taught criticism, rhetoric, and grammar at Athens, visited the East, and became counsellor to Zenobia, queen of Palmyra, whom he encouraged to throw off the Roman yoke, for which, after the reconquest of Palmyra, he was put to death by the Emperor Aurelian A.D. 273. Of the many writings of Longinus the treatise on the Sublime is the only one extant.

Longirostres (*L. longus*, long, and *rostrum*, a beak), a group of wading birds (Grallatores), characterized by the possession of long, slender, soft bills, mostly frequenting marshy districts, moors, fens, &c. This group comprises the snipes, woodcock, sandpipers, curlews, ruff, godwit, turnstone, avoet, &c.

Long Island, an island belonging to the state of New York, extending 118 miles in length, and varying from 12 to 23 miles in breadth; area, 1682 sq. miles. It is connected with New York city by a great suspension bridge carried across East River, and is separated from Connecticut by Long Island Sound. There are considerable tracts covered with timber; the most fertile portions are carefully cultivated, and much pro-

duce is sent to New York and Brooklyn. Railways are numerous. The chief city is Brooklyn, but there are many popular seaside resorts along the coast. Pop. 1,025,955.

Long Island, a name sometimes given to the whole of the Outer Hebrides.

Long Island City, a town of the United States, on the west coast of Long Island, and separated from Brooklyn by Newtown Creek. The city contains extensive warehouses, oil-refineries, timber-yards, machine-shops, manufactures of carpets, &c. Tramways connect it with Brooklyn, and ferries with New York. Pop. 1890, 30,506.

Long Island Sound, an arm of the sea between Long Island and the state of Connecticut, about 115 miles long and generally about 20 miles wide. It is connected with New York Bay by the strait called East River. See *East River*, *Hell Gate*.

Longitude, in geography, the distance of a place due east or west from a meridian taken as a starting-point, this distance being measured along the equator or a parallel of latitude; in other words, it is the angle between the meridian plane of one place and some fixed meridian plane. Longitudes are generally reckoned from the meridian of Greenwich; the meridians of Paris, Ferro, and Washington are or have been also em-



ployed. (See *Meridian*.) Since the parallels of latitude get smaller towards the poles, at which all the meridians converge, it is evident that degrees of longitude which are $69\frac{1}{2}$ statute miles long at the equator get shorter towards the poles, at which they finally become 0, as will be understood from the accompanying cut. As the earth makes

one revolution on its axis, that is turns through 360° of longitude from west to east, in twenty-four hours, if the sun or a star is on the meridian of any place at a particular time it will be on the meridian of another place 15° west of the first in one hour. Thus 15° of longitude represent one hour of difference in time, and hence longitude may be easily determined by the use of the chronometer set to Greenwich time, which is the method commonly employed at sea. Longitude is reckoned to 180° eastward or westward of the fixed meridian. The latitude and longitude of a place are what enables us to fix its exact position on a map or globe. Celestial longitude is quite analogous to terrestrial.

Longstreet, GENERAL JAMES, American soldier, born in South Carolina 1821. He graduated at the Military Academy in 1842; saw much service on the Mexican frontier, and took a prominent part on the Confederate side during the civil war. Since the close of the war he has occupied several important offices, including that of ambassador to Constantinople.

Longton, a municipal borough of England, in Staffordshire, 5 miles S.E. of Stoke-upon-Trent. It is a seat of china and earthenware manufacture, and has breweries, malt-kilns, brick-works, and in the vicinity collieries and iron-mines. Pop. 1891, 34,327.

Longus, a Greek novelist, probably of the 3d century after Christ. He is the author of the pastoral romance of Daphnis and Chloe.

Longworth, NICOLAS, horticulturist, was born in Newark, N. J., in 1782. In 1803 removed to Cincinnati. He devoted himself to the cultivation of the grape and strawberry. Kindly but eccentric, he gave much money to the "devil's poor." His property was estimated at from ten to fifteen million dollars. He died in 1863.

Lonice'ra. See *Honeysuckle*.

Lons-le-Saunier (lon-lê-sō-nyā), a town of France, capital of the department of the Jura, 45 miles S.W. of Besançon. It has manufactures of spectacles, textiles, &c. Pop. 10,010.

Loo-Choo, LEW-CHEW, LIU-KIU (Japanese, RIU-KIU), a chain of islands in the Pacific, between Japan and Formosa, and between lat. $24^\circ 10'$ and $28^\circ 40'$ N.; but the name is sometimes extended also to the group further north, properly known as the Linschoten Islands. The largest island is Okinaw, or Great Loo-Choo (area about

500 sq. miles). Oshima, the island next in size, has an area of 300 sq. miles. The climate is healthy, temperate, and favourable for agriculture. The chief products are rice, wheat, maize, and batatas; the sugar-cane, cotton, sago, tobacco, indigo, the fig, and the banana are also grown. The inhabitants are mainly of race akin to the Japanese, but their manners and civilization are chiefly those of the Chinese. Since 1874 the archipelago has belonged to the Japanese empire. Confucianism is the prevailing religion, but Buddhism has a considerable number of adherents. Pop. 356,801.

Loomis, ELIAS, physicist, was born in Willington, Conn., in 1811. In 1838 became Prof. of Mathematics and Natural Philosophy in Western Reserve College; in 1844 Prof. of Natural Philosophy in the University of the city of New York; in 1860 Prof. of Natural Philosophy and Astronomy in Yale College. His text-books have had an immense circulation. The titles of his scientific papers exceed 100.

Lopez, CAPE, a low promontory on the west coast of Africa, in the delta of the river Ogoway, territory of the French colony of Gabun. In 1883 M. de Brazza made it a station and entrepot.

Lopez, FRANCISCO SOLANO, President of Paraguay, born at Asuncion in 1827, son of Don Carlos Antonio Lopez, then president. His early education was neglected during the dictatorship of Francia. In his eighteenth year his father made him a brigadier-general in the war against Rosas, the dictator of Buenos Ayres, but he took no actual part in the struggle. He afterwards filled some of the principal offices of state, and was sent to Europe in 1853, accredited to the chief courts there. In 1855 he returned to Paraguay, became minister of war, and on the death of his father, in 1862, president for ten years. He had long been aiming at the foundation of a great inland empire, and as his military preparations were now complete, and his army superior to that of any of the South American States, he took opportunity in 1864 to commence hostilities against Brazil. The Argentine Republic and Uruguay allied themselves with Brazil, and after five years' conflict Lopez was reduced to extremities, and was finally surprised on the banks of the Aquidaban by a troop of Brazilian cavalry and slain, 1st March, 1870. The latter part of his career had been stained by many cruelties and wanton murders.

Lophius. See *Angler*.

Lophobranchii, the sub-order of Teleostean fishes, including the peculiar 'Sea-horses' and the 'Pipe-fishes.' See *Pipe-fishes* and *Sea-horses*.

Loquat (*Eriobotrya japonica*), a Japan fruit-tree of the nat. order Rosaceæ, and closely allied to the medlars. The fruit is about the size of a large gooseberry, of a fine yellow colour. The tree is a beautiful evergreen, whose white flowers have a fragrance like that of hawthorn blossom. It attains a height of from 20 to 30 feet, but when cultivated it is not allowed to exceed 12 feet. It thrives well in Australia, and is often reared in hothouses in Britain.

Loranthaceæ, a nat. order of exogenous plants, of which the mistletoe is the type, the perianth being often brilliantly coloured, all in one piece, or formed of many sepals.

Lorca, a town of Southern Spain, in the province and 42 miles south-west of Murcia, consists of an old Moorish town on a slope crowned by a castle, and a lower modern town. There are manufactures of coarse woollens, linens, leather, soap, and earthenware, and an important annual fair which lasts fourteen days. In the vicinity are lead-mines. Pop. 1887, 58,327.

Lorcha, a light Chinese sailing vessel, carrying guns, and built after the European model, but rigged like a Chinese junk.

Lord (Anglo-Saxon *hlâford*, for *hlâfweard*, that is bread-keeper), a title of honour or dignity, used in different senses. In the feudal times a lord was the grantor or proprietor of land, who retained the dominium or ultimate property of the land or fee, the use only being granted to the tenant. A person who has the fee of a manor, and consequently the homage of his tenants, is called the *lord of the manor*. Loosely all who are noble by birth or creation, as the peers of Britain, may be called *lords*. The *lords temporal*, in contradistinction to the *lords spiritual*, are the peers who sit together in the House of Lords, as opposed to the bishops who have seats in the house. Lord is sometimes only an official title, as *lord advocate*, *lord mayor*, &c. It is also applied, but only by courtesy, to the sons of dukes and marquises, and to the eldest sons of earls. (See *Address*, *Forms of*.) In Scotland the judges of the Court of Session prefix the title 'lord' to their surname, or to some territorial designation assumed by themselves. Judges, when on the bench, are addressed as 'My lord' throughout the three kingdoms.

Lord Mayor, the title given to the chief magistrates of London, Dublin, and York, during the year for which they hold office.

Lord-Mayor's-Day, the 9th of November, on which a great procession accompanying the newly-elected Lord Mayor of London, from Westminster to Guildhall, takes place. The procession, formerly famous for its historical and allegorical devices, has now much dwindled.

Lords, HOUSE OF. See *Parliament*; also *Britain*, *Peerage*.

Lord's Prayer, a formula of prayer enunciated by Christ on two different occasions, for which see Matt. vi. 5-13, Luke xi. 1-4. Among the earliest Christians it was accepted as the standard form of prayer, and its use in the liturgy is frequently mentioned by the early fathers. The concluding clause of the prayer, known as the doxology, 'For Thine is the kingdom,' &c., is not found in St. Luke's gospel, and even in that of St. Matthew it is only found in some of the later manuscripts, in which it is generally held to be an interpolation. It is generally retained by Protestants, but is discarded by Roman Catholics.

Lord's Supper, one of the sacraments of the Christian religion: so named because it was instituted by our Saviour when he took his last meal with his disciples, on the occasion of celebrating the Passover. It has also the names of eucharist and communion, and among the Catholics that of the mass or sacrifice of the mass. It has undoubtedly been celebrated, with certain differences, ever since its institution, and still is celebrated by all sects of Christians except the Quakers, however much their views may differ as to its nature and virtue. The chief controversies regarding the nature of the rite have been chiefly on the question of the 'real presence' of Christ's body and blood and the doctrine of transubstantiation. The doctrine of transubstantiation, first started by Paschasius Radbertus in the 9th century, was soon generally received, and at last was officially approved by the Council of Rome in 1079, and solemnly confirmed in 1215 by the fourth Lateran Council. According to this doctrine the whole substance of the bread and wine is changed into the body and blood of Christ, only the appearance of bread and wine remaining; and the Roman Catholic Church further maintains that Christ is given wholly and entirely both under the form of the bread and under that of the wine. From the doctrine

of transubstantiation sprang the adoration of the host (or sacred bread), as well as the custom of refusing the cup in the communion to the laity and non-officiating priests, a practice first authoritatively sanctioned at the Council of Constance, 1415. At the Reformation both the German and Swiss reformers agreed in rejecting the doctrine of transubstantiation and the mass, and maintaining that the Lord's supper ought to be celebrated before the whole congregation, and with the administration of both bread and wine. In explaining the words by which the supper was instituted Luther and Zuinglius differed, and their different opinions on this subject formed the principal subject of dissension between the Lutheran and Calvinistic churches. Luther took the words, 'This is my body,' &c., in their literal sense, and thought that the body and blood of Jesus Christ are united, in a mysterious way, with the bread and wine, which, however, remain unchanged, so that the communicant receives, in, with, and under the bread and wine, the real body and blood of the Redeemer. Zuinglius, on the other side, understood the words in a figurative sense, and maintained that the Lord's supper was a mere commemoration of the death of Christ, and a profession of belonging to his church. This view is in substance adopted by the Socinians, Arminians, and some others. The opinion advanced by Calvin, by which a spiritual presence of the body and blood of Christ is supposed in the communion, by partaking of which the faithful receiver is brought into union with Christ, through the medium of the Holy Ghost, though it came nearer to the Lutheran doctrine than that of Zuinglius did, yet was essentially different. The Greek Church has not adopted the doctrine of Transubstantiation in its whole extent; yet her doctrine, which was defined and sanctioned by the Synod of Jerusalem in 1672, comes nearer to this dogma than to that of the Reformed church. The Anglican Confessions incline more to the view of Zuinglius. The 28th Article of the Church of England declares that 'the body of Christ is given, taken, and eaten in the supper only after an heavenly and spiritual manner.' The doctrine adopted by the Presbyterian Church of Scotland in the main agrees with that propounded by Calvin.

Lorelei (lō're-lī), a precipitous cliff on the Rhine, about 450 feet high, half a mile above St. Goar. Legend gives it as the abode of

a siren, who by her singing enticed boatmen thither to their destruction.

Lorenzo Marques. See *Delagoa Bay*.

Loret'to, or **LORE'TO**, a city of Italy, in the province of Ancona, about 3 miles from the sea. Pop. 4134. The city is a famous resort of pilgrims, who come to visit the *Casa Santa* or Holy House of Loretto, which is said to have been the house of the Holy Family at Nazareth, and to have been miraculously conveyed by the angels first to Fiume in Dalmatia, and afterwards to Loretto. This Holy House, which is in the centre of a church built by Majano and Bramante (1464-1587), is covered externally with white marble, is 30 feet long, 15 wide, and 18 feet high, and richly ornamented. The number of pilgrims amounts to 50,000 yearly.

Lorient, or **L'ORIENT** (lo-ri-än), a fortified seaport of France, in the department of Morbihan, at the mouth of the Scorff. It is well built, and has a capacious harbour and extensive docks. Pop. 1891, 42,116.

Lor'ikeet, the general name of certain small Australian birds belonging to the parrot tribe and forming the genus *Trichoglossus*, remarkable for their extensible tongue, furnished with a pencil at its extremity, by which they are enabled to suck up the nectar of flowers.

Lorillard, **JACOB**, merchant, was born in New York city in 1774. The profits of his leather business he invested largely in real estate in New York city. He was liberal to the poor, often assisting struggling traders with credit. He was President of the Mechanics' bank and an officer in many commercial, benevolent and religious associations. He died in 1838.

Loris, a genus of quadrumanous mammals allied to the lemurs.

Loris-Melikoff, **MICHAEL TARIELOVITCH TAINOFF**, COUNT, Russian general, born 1826 at Tiflis, died 1888. He entered the army in 1843; distinguished himself in the Caucasus in 1847, and at the siege of Kars in 1854; was made lieutenant-general in 1863; commander of the army in Armenia in 1876, and took Kars. In 1878 he was made a count; in 1879 governor-general of Char'kow, in which post he suppressed the Nihilistic conspiracies with much vigour. In 1880 he was appointed minister of the interior, in which post he showed a tendency towards measures of a wide remedial kind, and had persuaded the czar, Alexander II., to call a kind of national representative assembly, when the assassination of the latter

occurred, March, 1881. On the accession of Alexander III. Loris-Melikoff's position became untenable, and he resigned in 1881.

Lorne, RIGHT HON. JOHN GEORGE DOUGLAS SUTHERLAND CAMPBELL, MARQUIS OF, eldest son of the Duke of Argyll, was born in 1845, and educated at Eton, St. Andrews University, and Cambridge. He represented Argyllshire in the Liberal interest (1868-78), married the Princess Louise in 1871, and was governor-general of Canada from 1878 to 1883. He has written several books, tales, &c., amongst which we may mention *The Book of Psalms*, literally rendered in verse; *A Trip to the Tropics*; *Guido and Lita*, a Tale of the Riviera (in verse); *Memoirs of Canada and Scotland*.

Lorraine (German, *Lothringen*; anc. *Lotharingia*), a territory now divided between Germany and France, was originally so named as being the kingdom of Lothaire II. It was afterwards divided into two parts, Upper and Lower Lorraine. The latter, between the Rhine, Meuse, and Scheldt, became the duchy of Brabant, and ultimately a part of Belgium. Upper Lorraine, between the Rhine, Saône, and Meuse, was for long an independent duchy, but was ceded to France in 1736. The inhabitants, though of German origin, speak the French language, except those of the district between Metz and the Vosges, which was on that account called *German Lorraine*. At the end of the war between France and Germany in 1870-71 a considerable portion of Lorraine, including the fortresses of Metz and Thionville, was annexed to Germany, and now forms part of the imperial territory of Alsace-Lorraine (which see).

Lorraine, CLAUDE. See *Claude Lorraine*.

Lory, a group of scansorial birds, of the



Purple-capped Lory (*Lorius domicellus*).

family Psittacidæ or parrots, having broad tails, and dense soft plumage, the colours of

which are brilliant. They are found in the Eastern Archipelago, also in New Guinea, Borneo, and the South Sea Islands. The collared lory is easily taught to speak.

Lossing, BENSON JOHN, author, was born in Beekman, N. Y., in 1813. He was a voluminous writer and annotator. Died June 3, 1891.

Los Angeles (lōs an'je-les), a city, the capital of Los Angeles county, California, on the river of the same name, about 15 miles from the Pacific coast. It has extensive vineyards, orange and olive plantations, corn-mills, paper-mills, distilleries, iron-foundries, and an active commerce. Gold, silver, copper, and zinc are found in the neighbouring mountains. Pop. 50,395.

Lost Property, strays and waifs excepted, may be retained by the finder with impunity, after proper means have been taken to advertise it; and if it cannot be conveniently preserved without hazard he may dispose of it if not claimed. If, however, the loser can identify his property he has a right to restitution, and a third party purchasing lost property from the finder must restore it to the owner if called upon. There are certain cases in which a jury will construe the retention of lost property into larceny. The finder is not obliged to incur expense in advertising for the owner. In cases of treasure-trove, that is, the finding of gold, silver, &c., deposited in the earth, the finder must, under a penalty, give notice to the crown, in which the ownership of all treasure-trove is vested.

Lot (lō), a department in the south of France; area, 2020 sq. miles. The arable land, amounting to a half of the whole, has deep alluvial soils, adapted to wheat, maize, hemp, and tobacco; and lighter soils, more suitable for barley, rye, and root crops. Vines, the mulberry for silkworms, and plums are extensively grown. Sheep-rearing is an important industry. Corn and other agricultural products are largely exported. The capital is Cahors. Pop. 1891, 253,885.—The river Lot, which gives name to the department, is one of the largest tributaries of the Garonne. Total course, about 250 miles, of which 180 miles are navigable.

Lot-et-Garonne (lō-e-gā-ron), a department in the south-west of France; area, 2050 sq. miles. It is intersected by the Garonne and its tributary the Lot, hence the name. More than a half of the department is arable, producing crops of wheat,

maize, rye, &c. Other important crops are tobacco and hemp. Prunes and chestnuts are largely exported, and the cork-oak is abundant. There is an active trade in wine, brandy, meal, hemp, resin, &c. Capital Agen. Pop. 1891, 295,360.

Lothaire, a name of old German origin, borne by kings of the Franks and early German emperors. See *Louis I.*

Lothian, EAST. See *Haddingtonshire.*

Lothian, MID. See *Edinburghshire.*

Lothian, WEST. See *Linlithgowshire.*

Lotions, liquid remedies, consisting principally of distilled or filtered soft water, holding in solution various medical substances, and applied externally. Lotions are either cooling, stimulating, astringent, soothing, or sedative.

Lotoph'agi, or lotus-eaters, in ancient Greek legends, the name of a people on the north coast of Africa who lived on the fruit of the lotus-tree. According to Homer they received Ulysses and his followers hospitably, but the sweetness of the fruit induced such a feeling of happy languor that they forgot their native land and ceased to desire to return to it, their sole object being to live in delicious dreamy idleness in Lotusland. See *Lotus.*

Lot'tery, a scheme for the distribution of prizes by chance, the plan being generally to have a certain number of prizes and a much greater number of tickets, the prizes being allotted according as the drawing of numbered tickets from a suitable receptacle shall decide. Lotteries on the large scale originated in Italy, from which they passed into France. In England the first public lottery occurred in 1569, the proceeds being devoted to public works. In 1612 a lottery was granted in behalf of the Virginia Company. In 1709 the rage for private, and, in many instances, most fraudulent lotteries, was at its height in England, and towards the close of the year an existing act of parliament was put in force for the suppression of such lotteries as public nuisances. Government lotteries still continued, however, and large sums of money were raised by them; but in 1826 lotteries were entirely abolished in Britain, except in the case of art-unions, which are permitted from their supposed good effects in encouraging art. In France the demoralizing influence of lotteries caused their suppression in 1836, with the effect of largely increasing in the following year the deposits in the savings-banks. They are still exceptionally permitted. Lotteries

for merchandise of all kinds, from estates to pictures, are common in Germany; and in Italy and Austria the governments draw an important part of the revenue from their management of money lotteries. In most of the United States lotteries, formerly very commonly resorted to as a means of assisting colleges or benevolent institutions, have been abolished. By act of Congress they are deprived the use of the mails.

Lotus, a name applied to a number of different plants, from the lotus famous in Greek legend. One of these is the *Zizyphus Lotus*, a native of Northern Africa and Southern Europe, belonging to the nat. order Rhamnaceæ. It is a shrub 2 or 3 feet high, bearing a fruit, the jujube, which is a drupe of the size of a wild plum. Some think this was the food of the Lotophagi (see *Lotophagi*), though others consider Homer's lotus to have been the date, or the berry of the *Rhamnus Lotus*, a North African shrub, while others again refer it to the agreeable berry of the *Nitraria tridentata*, still greatly prized by the Berbers. The name lotus was also given to several species of water-lily, as the blue water-lily (*Nymphaea cærulea*), the Egyptian water-lily (*N. Lotus*), and to the nelumbo (*Nelumbium speciōsum*), which grow in stagnant or slowly running waters. *Nymphaea cærulea* and *N. Lotus* are often found figured on Egyptian buildings, columns, &c., and the nelumbo, or Hindu and Chinese lotus, bears a prominent part in the mythology of these countries. The name is also given to a genus of plants, natural order Leguminosæ, consisting of creeping herbs and undershrubs, chiefly natives of temperate regions throughout the world. Four or five species are found in Britain, where they are known as bird's-foot trefoil.

Lotze (lot'se), RUDOLF HERMANN, a German philosopher and physiologist, born at Bautzen in 1817; studied philosophy and medicine at Leipzig; was appointed professor of philosophy at Göttingen in 1844, and was called in 1881 to Berlin, where he died the same year. As a philosopher the standpoint of his system may be described as a teleological idealism, according to which the sufficient ground for all being, and for all that takes place in the universe, is found in the idea of the Good. Among his works are *Metaphysik* (1841), *Universal Pathology* (1842), *Logik* (1843), *On the Idea of Beauty* (1846), *Medical Psychology* (1852), *Microcosmus*, *Ideas for a History of Nature*

and Humanity (1856), System of Philosophy (1874-84).

Loudon, JOHN CLAUDIUS, a Scottish horticulturist, born 1783, died 1843. He practised landscape-gardening in England, and was the author of numerous works, the principal of which are the Encyclopædias of Gardening (1822), of Agriculture (1824), and of Plants (1829). He edited the Gardener's Magazine from 1826 to 1843 and Loudon's Magazine of Natural History from 1828 to 1836. The work which he intended to be his greatest, the Arboretum et Fruticetum Britannicum, and which was published in 1838 at his own expense, involved him in a debt of £10,000.—His wife, JANE WEBB LOUDON, was also the author of several popular botanical works, such as British Wild Flowers (1846), Botany for Ladies (1849). She died in 1858.

Loughborough (luf'-), a town of England, in the county and 10½ miles N.N.W. Leicester. It is neatly built, and has a thriving appearance. The principal manufacture consists of hosiery. There are also a famous bell-foundry, dye-works, brick-works, &c. Pop. 18,196.—Loughborough gives name to a parliamentary division of Leicestershire.

Loughrea (loh-rā'), a town of Ireland, county Galway, on Loughrea, a small lake 4 miles in circumference. Pop. 3159.

Louis I., or as a German name LUDWIG, surnamed *Le Débonnaire*, or *the Pious*, the son of Charlemagne, born in 778, succeeded his father in 814 as King of the Franks and Emperor of the West. In 817 he divided his dominions among his three sons, Lothaire, Pepin, and Louis. His nephew Bernard, king of Italy, revolted at this division, but was allured by Louis to Châlons, where he was put to death. In 829, in consequence of the urgent solicitations of his second wife, Judith of Bavaria, who had borne him a son, he made a new division of the empire. The result was that the elder brothers revolted and commenced a war, which, with various fortune to the parties chiefly concerned, lasted till the death of the emperor in 840. He was succeeded as emperor by his son Lothaire I.; and by the treaty of Verdun in 843 his son Charles the Bald obtained the territories from which France as a separate nationality developed; while another son, Louis the German, obtained territories from which the distinctive German nationality developed. See *France, Germany*.

Louis VII. of France (counting from the above Louis I.), born in 1120, succeeded his

father Louis VI. in 1137. He joined the second crusade to Palestine in 1147, but returned two years afterwards, having suffered many disasters, and lost most of his men. His divorced wife Eleanor married Henry II. of England, who thus acquired Guienne and Poitou. He died in 1180, and was succeeded by his son Philip Augustus.

Louis IX. (St. Louis), King of France, eldest son of Louis VIII., born in 1215, succeeded to the throne in 1226, but remained some time under the regency of his mother. In the year 1244, when sick of a dangerous disorder, he made a vow to undertake a crusade to Palestine; and in August, 1248, sailed with his wife, his brothers, and 80,000 men to Cyprus, and in the following year proceeded to Egypt. Landing at Damietta, in 1249, he took this city, and afterwards twice defeated the Sultan of Egypt, to whom Palestine was subject. But famine and contagious disorders soon compelled him to retreat; his army was almost entirely destroyed by the Saracens, and himself and his followers carried into captivity. It was not till the year 1254 that Louis returned to France, and employed himself in improving the condition of the people by wise laws. In 1270 he determined to undertake another crusade. He sailed to Africa, besieged Tunis, and took its citadel. But a contagious disorder broke out, to which he himself (1270), together with a great part of his army, fell a sacrifice. In 1297 he was canonized by Boniface VIII.

Louis XI., King of France, eldest son of Charles VII., was born in 1423, and on his father's death in 1461 he assumed the crown. His unscrupulous ambition soon caused a league headed by the dukes of Burgundy, Lorraine, and others, to be formed against him, but his craft and the promises of concessions which he made brought about the dissolution of the league. After the death of Charles the Bold of Burgundy before Nancy in 1477, Louis took possession by force of a considerable part of his dominions as vacant fiefs of France, on account of which a war arose between him and Maximilian of Austria, who had married Mary, the daughter of the deceased duke. It was eventually agreed that the dauphin should marry Margaret, daughter of Maximilian, and receive the counties of Artois and Burgundy. In 1481 Louis, who had been twice affected by apoplexy, haunted by the fear of death, shut himself up in his castle of *Plessis-les-Tours*, and gave himself over to super-

LOUIS XII. — LOUIS XIV.

stitious and ascetic practices. He died in 1483. The great object of Louis was the consolidation of France, the establishment of the royal power, and the overthrow of that of the great vassals, and in achieving this end he was very successful, although by most unscrupulous means. He encouraged manufactures and trade, and did much for the good of his kingdom, but was cold-hearted, cruel, and suspicious. Louis XI. was the first French monarch who assumed the title of *Most Christian King*, given him by the pope 1469.

Louis XII., King of France from 1498 to 1515, called by his subjects *le Père du Peuple*, was born in 1462. He was the son of Charles, duke of Orleans, grandson of Charles V. He divorced his first wife Jeanne, daughter of Louis XI., and married the widow of Charles VIII., thus uniting the Duchy of Brittany with the crown. In Italy he conquered the Duchy of Milan, took possession of Genoa, and fought with Ferdinand the Catholic for the Kingdom of Naples. Louis took part in the League of Cambray against the Venetians, whom he defeated at Agnadello in 1509. In 1510, however, he had to face the Holy League formed against him by Julius II., Venice, Spain, England, and the Swiss; was beaten at Novara by the Swiss in 1513, and by the English at Guinegate, and had to retreat out of Italy. At the age of fifty-three he married a second wife, Mary, the sister of Henry VIII. of England, and died about three months afterwards (1515) without male issue. He was succeeded by Francis I.

Louis XIII., King of France, surnamed the *Just*, the son of Henry IV., born 1601. He ascended the throne (1610) after the murder of his father, his mother (Maria de' Medici) being made guardian of her son and regent of the kingdom. In 1614 Louis was declared of age, and married the year following Anne, daughter of Philip III. of Spain. His mother was now exiled from court, and excited a civil war, during which the Huguenots also rose in arms against the king. Louis gave himself up to the guidance of Cardinal Richelieu. A peace was concluded in 1623, but it was not of long continuance. Eventually Rochelle, the headquarters of the Huguenots, was captured (1628), and the revolt, headed by the queen-mother, was broken by the defeat of the insurgents at Castelnaudary (1632). Louis was now induced by Richelieu to take part in the Thirty Years' war, and obtained frequent

successes over the Austrians and Spaniards, adding Roussillon, Alsace, and the Duchy of Bar to France. He died in 1643.

Louis XIV., King of France, known as *Louis the Great*, son of Louis XIII. and Anne of Austria, was born at St. Germain-en-Laye 1638, and succeeded his father in 1643. His minority was occupied by the continuation of the wars against Austria; by the victories of Condé—victories crowned by the Treaty of Westphalia; by the struggles of the parliament against the regent and Ma-



Louis XIV.

zarin; by the bloody troubles of the Fronde faction; the revolt of Condé; &c. In 1659 peace was concluded with Spain, and Louis married Maria Theresa, daughter of Philip IV. of Spain. On the death of Mazarin in 1661 Louis resolved to rule without a minister. He reformed the administration and the taxes, and made the famous Colbert superintendent, who accomplished a series of financial reforms, created the Company of the Indies, made roads, canals, and founded manufactures. In 1662 he purchased Dunkirk for 5,000,000 livres from the needy Charles II. On the death of his father-in-law he claimed Franche-Comté and Flanders, and invaded those territories, Turenne and Condé leading his armies, in 1667. In 1672 he declared war with Holland, and in a few weeks he had conquered three provinces; but the formation of the Grande Alliance between the Emperor, William of Orange, Spain, Denmark, &c., checked his ambition. Still the Treaty of Nimeguen (1678) left Louis in possession of

Franche-Comté and a part of Flanders. Louis was now at the height of his glory, and the splendour of his court, adorned by whole groups of great generals, poets, philosophers, and notable men, far outshone that of other European courts. Maria Theresa having died in 1683, he secretly married Madame de Maintenon about 1684 or 1685. She is said to have had a considerable part in the revocation of the Edict of Nantes, which drove so many industrious Protestants into exile. (See *Nantes*.) The League of Augsburg was now formed against Louis by Spain, Holland, England, Sweden, &c. A general war continued with frequent and severe losses to the French till the Peace of Ryswick (1697), by which Louis was to restore all his recent conquests and most of the acquisitions made since the Peace of Nineguen. The question of the Spanish Succession once more brought Louis into conflict with a united Europe. The principal episodes of the war were the victories of Blenheim, Ramillies, and Malplaquet, gained by Marlborough and Prince Eugène. Hostilities were terminated by the Peace of Utrecht in 1713, without altering the relative position of the combatants. Louis died on the 1st of September, 1715, and was succeeded by his great-grandson Louis XV. The brilliant reign of Louis left France impoverished and most of her industries languishing.

Louis XV., the great-grandson of Louis XIV., was born 1710; commenced his reign in 1715, but did not actually assume the government himself till 1723. In the interval the country was under the regency of the Duke of Orleans (see *Orleans*), by whose folly, and by the rash financial schemes of John Law (see *Law*), it was brought to the verge of ruin. In 1726 Louis placed his tutor Cardinal Fleury at the head of the administration. In 1725 he had married Maria, daughter of Stanislaus Leczynski, the dethroned king of Poland, and in 1733 became involved in a war in support of his father-in-law's claims. After two campaigns he acquired for Stanislaus the Duchy of Lorraine. After the death of Charles VI. in 1740 the war of the Austrian Succession broke out, in which the victories of Count Maurice of Saxony gave new splendour to the French arms; and by the Peace of Aix-la-Chapelle, in 1748, France regained her lost colonies. Louis now began to sink into the grossest indolence and sensuality, abandoning the management of state affairs to Madame de

Pompadour, who recklessly squandered the public money. From 1769 he was governed by Madame du Barry, who is said to have cost the royal treasury in five years 180,000,000 livres. The Seven Years' war (1756-63), in which France was involved, brought severe losses and humiliations on the country, and transferred to Great Britain Canada, Cape Breton, and other territories. Under the auspices of the Duke de Choiseul the Jesuits were expelled from France in 1764. In 1771 a quarrel between the new prime-minister, the Duke d'Aiguillon, and the parliament induced the king to banish the members of the parliament from Paris, and soon after to abolish the parliaments entirely. Louis died in 1774 of small-pox, leaving a debt of £160,000,000 and a demoralized kingdom.

Louis XVI., King of France, grandson of Louis XV., was born 1754, and in 1770 married Marie Antoinette of Austria. He ascended the throne in 1774. His moral character was far superior to that of the previous king; but his weakness and want of decision made him very unfit for wielding the sceptre of a great country, especially at such a critical period. He could not comprehend the situation of affairs indeed, and had no thought of checking his personal extravagance; while the queen also gave herself up to her love of gaiety, and the festivals of Versailles and Petit Trianon were on a scale of lavish magnificence. At last, in 1789, all the grievances and discontents which had been gathering during a long period of misrule found vent; the populace attacked and destroyed the Bastille; and the revolution was accomplished. In June 1791 the position of the king had become so perilous that he attempted to escape, but was intercepted at Varennes and forced to return. Amongst the events which followed were the attack of the populace of Paris on the royal palace, June 20, 1792; the king's arrest in the national assembly, to which he had fled for refuge; finally, his trial before the convention, where he replied to the charges with dignity and presence of mind. (See *France*.) On January 16, 1793, he was declared guilty of a conspiracy against the freedom of the nation, by a vote of 690 out of 719; on the 17th he was condemned to death, by a majority of only five in 721, and on the 21st he was guillotined.

Louis XVII., King of France, second son of Louis XVI., was born in 1785. On the death of his elder brother in 1789 he be-

came dauphin, was proclaimed king by the royalists on the death of Louis XVI., was soon after separated from his mother, sister, and aunt, and delivered (1793) to a shoemaker named Simon, a fierce Jacobin, who, with his wife, treated the young Capet with the most unfeeling barbarity. He survived this treatment only till June 8, 1795, when he died at the age of ten years and two months.

Louis XVIII., King of France, third son of the dauphin, the son of Louis XV., was born in 1755, and died 1824. At the accession of his brother Louis XVI. in 1774 he received the title of Monsieur. He favoured the Revolution in its first stages, and secured the extended representation of the Third Estate. He lost his popularity, however, fled from Paris the same night as the king, and by taking another route reached the frontier in safety. After the death of Louis XVI. Monsieur proclaimed his nephew King of France as Louis XVII., and in 1795 he was himself proclaimed by the emigrants King of France and of Navarre. For many years he led a wandering life, supported by foreign courts and by some friends of the house of Bourbon. He at last took refuge in England in 1807, and lived there till the fall of Napoleon opened the way for him to the French throne. He entered Paris in May, 1814; had to fly on Napoleon's escape from Elba, but was replaced on the throne by the Allies after Waterloo. He was weak in character, but gained considerable esteem and affection.

Louis, Sr., a city of the United States. See *St. Louis*.

Louisburg, a seaport of Cape Breton, province of Nova Scotia, Canada, on the s.e. side of the island. It was strongly fortified under the French; but was taken by the British in 1763, who demolished the fortifications, after which the town fell into ruin. It has a fine harbour with a lighthouse on the east head; is a port of call for steamers, but the inhabitants consist of only a number of fishermen.

Louis d'Or (lō-ē dor; Fr., 'a Louis of gold'), or simply **LOUIS**, a gold coin of France, first struck in 1640, in the reign of Louis XIII., and continuing to be coined till 1795. It ranged in value from about 16s. 7d. to 18s. 9¾d. stg. In 1810 the louis d'or was replaced by the napoleon of 20 francs, or 15s. 10d. stg., and when the coin was again struck under the restoration the same value (20 francs) was retained.

Louisiade Archipelago, a group of three small islands and a number of islets off the s.e. extremity of New Guinea. They became a British possession in 1885.

Louisiana (lō-iz-i-an'a), one of the Southern United States of America, bounded north by Arkansas, north-east and east by Mississippi, from which it is partly separated by the river of that name, south-east and south by the Gulf of Mexico, and west by Texas, from which it is separated chiefly by the Sabine. It has an area of 48,720 square miles. The surface is generally flat and low; the delta of the Mississippi, and the land along that river, having to be protected from inundation by levées or artificial embankments. The coast is a low swampy region producing large quantities of rice and sugar-cane; towards the north and north-west, where the highest elevation is reached, the land is less productive, but bears valuable timber. The chief rivers are the Mississippi, which runs for about 600 miles along the border of and through the state; the Red River, which crosses the state diagonally and forms an important avenue of inland commerce; the Washita, Sabine, Pearl, &c., all navigable. There are also numerous 'bayous' or secondary outlets of the rivers of much importance for both navigation and drainage purposes, the chief of which are the Atchafalaya with its series of lakes, the bayou Teche, bayou de Large, bayou La Fourche, and bayou Bœuf. Numerous lakes and lagoons are scattered over the state, mostly land-locked bays and expansions of rivers. The climate is semi-tropical, and the rainfall heavy along the coast. Coal, iron, sulphur, and rock-salt are found; the chief agricultural products are cotton, sugar, rice, maize, and tobacco. Free education is established, and the University of Louisiana, at Baton Rouge, and other institutions are devoted to the higher education. There are about 1400 miles of railway. The capital is Baton Rouge, but New Orleans is much the largest town. Louisiana was colonized by the French in 1699, and was ceded in 1717 to a chartered company, one of the schemes of the notorious Law. In 1720 it was resumed by the crown; in 1763 it was ceded by France to Spain; in 1800 re-ceded to France; and in 1803 purchased from France by the United States. It was admitted into the Union in 1812. Pop. in 1890, 1,118,587, of whom 562,893 were coloured.

Louisiana, Pike co., Mo. Pop. 5090.

Louis Philippe, King of the French, born at Paris 1773; died at Claremont, England, 1850. He was the eldest son of Duke Louis Philippe Joseph of Orleans, surnamed *Égalité* (see *Orleans*), and during his father's lifetime he was known as Duke of Chartres. He entered the army in 1791, and favouring the popular cause in the Revolution he took part in the battles of Valmy and Jemappes; was present at the bombardment of Venloo and Maestricht, and distinguished himself at Neerwinden. Dumouriez had formed a scheme for placing him on the throne as a constitutional monarch, and being included in the order of arrest directed against Dumouriez, in 1793, he took refuge within the Austrian territory. For twenty-one years he remained exiled from France, living in various European countries, and in America. He had become Duke of Orleans on the death of his father in 1793, and in 1809 he married the daughter of Ferdinand IV. of Naples. After the fall of Napoleon I. he returned to France, and was reinstated in his rank and property. At the Revolution of July, 1830, he was made 'lieutenant-general of the kingdom,' and in August became king of the French. He reigned for eighteen years (see *France*), when the Revolution of 1848 drove him from the throne to England where he remained till his death.

Louis-Quatorze Style (lö-ē-kā-torz), the name given to a style of architecture and internal ornamentation prevalent in France in the reign of Louis XIV., specially applied to palaces and large mansions. Externally the forms are classical, freely treated, and rustication is much employed; the windows are larger and the rooms more lofty and spacious than in buildings of the period immediately preceding, and there is generally an effort at sumptuous elegance. The palace of Versailles and the east front of the Louvre are prominent examples of the style. The most characteristic features of the Louis-Quatorze style, however, are seen in the internal ornamental decoration, the great medium of which was gilt stucco-work, and its most striking characteristics are an in-

finite play of light and shade, and a certain disregard of symmetry of parts and of symmetrical arrangement. The characteristic details are the scroll and shell. The classical ornaments, and all the elements of the Cinquecento, from which the Louis-Quatorze proceeded, are admitted under peculiar treatment, or as accessories; the panels are formed by chains of scrolls, the concave and convex alternately; some clothed with an acanthus foliation, others plain.—The name *Louis-Quinze* (lö-ē-kānz) is given to the variety of this style which prevailed in France during the reign of Louis XV. In it the want of symmetry in the details, and of symmetrical arrangement, which characterize the Louis XIV. style, are carried to an extreme. It is crowded with meaningless parts devoid of beauty and expression.

Louisville (lö'i-vil or lö'is-vil), a city of the U. States, the commercial capital of Kentucky and county seat of Jefferson county, on the south bank of the Ohio, immediately above the falls. It has a river frontage of 8 miles, and is connected with the towns of New Albany and Jeffersonville on the opposite bank of the river, in the state of Indiana, by a bridge 5218 feet long. A canal 2½ miles long carries the river traffic round the falls or rapids. In addition to the river traffic an enormous trade is carried on by railway, tobacco, whisky, pork, and flour being among the chief articles. The manufactures are important and varied. The principal public buildings are a fine court-house, the city-hall, the public library, the jail, a custom-house, and four spacious market-houses, besides churches, asylums, and literary and scientific institutions. There are four medical colleges. An artesian well 2066 feet deep, having a daily flow of 330,000 gallons, forms part of the city water-works. Pop. 1890, 161,129.

Loule (lo-lā'), a town of Portugal, province and 9 miles N.N.W. of Algarve. It has the ruins of a Moorish castle, and is surrounded by a Moorish wall. Pop. 14,448.



Panel in the Louis-Quinze style.



Panel in the Louis-Quatorze style.

Lourdes (lörd), a French town, dep. of Hautes-Pyrénées, on the Gave de Pau. In 1858 a peasant girl declared that she had been favoured with visions of the Virgin Mary in a cave in the neighbourhood. Since then pilgrims have flocked to Lourdes, and a church, convent, and other buildings have been erected in connection with the cave. Pop. 5427.

Lourenço Marquez. See *Delagoa Bay*.

Louse, the common name of a genus (*Pediculus*) of apterous insects, parasitic on man and other animals. The common louse is furnished with a simple eye or ocellus, on each side of a distinctly differentiated head, the under surface of which bears a suctorial mouth. There is little distinction between the thorax and abdomen, but the segments of the former carry three pairs of legs. The legs are short, with short claws or with two opposing hooks, affording a very firm hold. The body is flattened and nearly transparent, composed of eleven or twelve distinct segments. The young pass through no metamorphosis, and their multiplication is extremely rapid. Most, if not all, mammals are infested by lice, each having generally its own peculiar species, and sometimes having two or three. Three species are said to belong to man, viz. *P. vestimenti* (body-louse), *P. capitis* (head-louse), and *P. pubis* (crab-louse).

Louth, a municipal borough of England, in Lincolnshire, on the Lud, 27 miles E.N.E. Lincoln, giving name to a parl. division. Carpets, soap and candles, agricultural implements, and oil-cake are manufactured. A canal extends to the Humber. Pop. 10,040.

Louth, the smallest county in Ireland, in the province of Leinster, bounded by the Irish Sea and the counties of Armagh, Monaghan, and Meath; length, 28 miles; breadth, 18 miles; comprising 204,123 acres, of which 170,000 acres are under tillage or in pasture. In its coast-line are Carlingford Lough, Dundalk Bay, and the estuary of the Boyne. On the north it is rugged and mountainous, but in all other parts level or undulating. The soil is generally fertile, excepting on the elevated tracts. Linen is manufactured, and there is also some cotton-spinning. The fisheries are important. Louth returns two members to parliament—one for North Louth, the other for South Louth. Drogheda and Dundalk (the county town) are the principal towns. Pop. 70,852.

Loutherbourg (lötér-börg), or more correctly, LUTHERBURG, PHILIP JAMES, a

painter and engraver, born at Strasburg in 1740; died near London in 1812. In 1771 he settled in London, and in 1782 he was made an Academician. As a landscape-painter he had deserved celebrity, and he excelled in battle-pieces. His etchings were also highly esteemed.

Louvain (lö-vañ; Flemish, *Leuven*; German, *Löwen*), a town of Belgium, in the province of Brabant, on the Dyle, 15 miles east by north of Brussels. It forms almost a perfect circle; diameter nearly 2 miles. The area is now too large for the population, and the town contains gardens and cultivated fields. The ramparts have been converted into promenades. Among the more noticeable public buildings are the Hôtel de Ville, one of the richest and most beautiful Gothic buildings in the world; and the church of St. Peter, built at the end of the 14th century, an edifice of vast extent, and rich in works of art. Louvain possesses a university, formerly of European reputation, and still attended by 1500 students. The town was formerly the capital of Brabant, and contained 200,000 inhabitants; present pop. 1891, 40,698.

Louverture. See *Toussaint-Louverture*.

Louviers (lö-vi-ā), a town in France, in the department of Eure, 17 miles south of Rouen. The staple manufacture is woollen goods and woollen yarn. Pop. 9560.

Louvois (lö-vwà), FRANÇOIS MICHEL LETELLIER, MARQUIS DE, minister of war to Louis XIV., son of the Chancellor Letellier, born at Paris 1641, died 1691. He obtained the reversion of the office of secretary of war held by his father, and became sole minister of war in 1666. He effected quite a revolution in the art of disciplining, distributing, equipping, and provisioning armies, and his administration was brilliant. It was partly by his advice that the Edict of Nantes was revoked in 1685, and the Palatinate was devastated in 1689. His arrogance had long rendered him odious to Louis, and his death was regarded as a relief by his master. Louvois's organization of the army lasted till the Empire; but he also undid the work of Colbert, and destroyed the commerce of France.

Louvre (lö'vèr), a dome-turret rising from the roof of a hall or other apartment, formerly open at the sides, but now generally glazed. Louvres were originally intended to allow the smoke to escape when the fire was kindled in the middle of the room. *Louvre window* is the name given to a window in a

church tower, partially closed by slabs or sloping boards or bars called *louvre boards* (corrupted into *luffer* or *lever boards*), which



Louvre, Abbot's Kitchen, Glastonbury.

are placed across to exclude the rain, while allowing the sound of the bell to pass.

Louvre, the old royal palace at Paris, said to have been a royal residence in the reign of Dagobert, 628. Francis I. erected that part of the palace which is now called the *old Louvre*, and the buildings have been enlarged and adorned by successive kings, particularly Louis XIV. The *new Louvre* begun by Napoleon I. was completed by Napoleon III. in 1857. The whole group of buildings is distinguished by its great extent, and by its elegant and sumptuous architecture. It contains museums of paintings, drawings, engravings, bronze antiques, sculptures, ancient and modern, together with special collections of antiquities, and an ethnographical collection. It was greatly injured by the Communists in May 1871, the Richelieu pavilion, containing the imperial library of 90,000 volumes and many precious MSS., having been entirely destroyed.

Lov'age, a herbaceous perennial umbelliferous plant, genus *Ligusticum*, widely distributed throughout temperate regions. *L. officināle*, common lovage, is sometimes used as an aromatic stimulant. *L. scoticum*, found on the sea-coasts of Scotland, is occasionally used as a pot-herb.

Lov'at, SIMON FRAZER, LORD, second son of Thomas Frazer of Beaufort, afterwards twelfth Lord Lovat; born 1667, be-

headed at Tower Hill, London, 1747. In 1699, on the death of his father, he assumed the title of Lord Lovat, to which on the death of the eleventh Lord Lovat his father had acquired a disputed claim. To secure the estates he effected a forced marriage with the Dowager Lady Lovat, for which he was outlawed and forced to take refuge in France. After a varied life of intriguing, first on the Hanoverian side and next on the Stuart, and a long imprisonment, his title, which had been objected to in various elections, was decided in his favour by the Court of Session in 1730. On the outbreak of the rebellion of 1745, Lovat acted with his usual duplicity, sending his son to fight for the Pretender, while he himself remained at home, protesting his loyalty to the Hanoverian house. This conduct brought him to trial for treason, and resulted in his execution.

Love Apple. See *Tomato*.

Love-bird, a name given to a genus of birds (*Agapornis* or *Psittacūla*) of the parrot family. They are a beautiful group, consisting of very diminutive species, found in America, Africa, and Australia. They receive their name from the great attachment shown to each other by the male and



Swindern's Love-bird (*Psittacūla swinderniana*).

female birds. Swindern's love-bird is barely 6 inches in length.

Love-feast. See *Agape*.

Lovelace, RICHARD, a poet and dramatic writer, son of Sir William Lovelace of Norwich, where he was born in 1618. He was distinguished by his fidelity to Charles I., in whose interest he expended his whole fortune, and died in poverty, 1658. His poems were light and elegant amatory pieces. He wrote two plays, the *Scholar*, a comedy, and the *Soldier*, a tragedy.

Lover, SAMUEL, novelist, poet, and musical composer, was born in Dublin in 1797, and died in 1868. He first devoted his attention to painting, but afterwards turned to literature, and wrote novels, which he illustrated with his own pencil, dramas, operettas, and songs, which he set to music. Among his works are *Legends and Stories of Ireland* (1832-34); *Rory O'More*, a novel (1837); *Songs and Ballads* (1839); *Handy Andy*, a novel (1842); *Treasure Trove*, a novel (1844). *The Angels' Whisper*, *Molly Bawn*, and the *Low-backed Car* are among his most popular songs.

Low Church, a name given to a section of the Church of England whose opinions are opposed to those of the High Church party, and are especially hostile to ritualism and sacerdotalism. See *High Church*.

Low Countries. See *Netherlands*.

Lowe (lō), SIR HUDSON, lieutenant-general in the British army; born at Galway 1769, died 1844. He entered the army at an early age, and served in various campaigns. In 1813 he was attached to the army of Blücher, and he took part in the invasion of France the following year. On the fall of Napoleon he was appointed governor of St. Helena, and intrusted with the care of the ex-emperor. He incurred the aversion of Napoleon, and many charges of undue severity were brought against him which were subsequently refuted. Sir Hudson was allowed, however, to die in poverty. His *Letters and Journals* were published in 1852.

Lowe, ROBERT. See *Sherbrooke*, *Viscount*.

Low'ell, a city of the United States, in Massachusetts, on the right bank of the Merrimack, 25 miles N.N.W. from Boston, neatly and substantially built of brick, and chiefly remarkable for being a leading seat of the cotton manufacture. There are also extensive bleacheries, large machine-shops, paper and chemical works, &c. Its machinery is largely driven by water-power supplied by the Merrimack, which here falls 33 feet. Seven railways centre in the place. Pop. 1890, 77,696.

Lowell, JAMES RUSSELL, American author, born in 1819 at Cambridge, Massachusetts, graduated at Harvard College in 1838, and at Harvard Law School in 1840. In 1841 he published a small volume of poems entitled *A Year's Life*, and became a regular contributor to various journals, including the *Boston Courier*, in which appeared the first series of the *Biglow Papers*, mainly a satire

on slavery and the Mexican war. In 1851 he travelled in Europe, and in 1855 succeeded Longfellow as professor of modern languages and belles-lettres at Harvard. From 1857 to 1862 he wrote many essays for the *Atlantic Monthly*, founded by Holmes, Longfellow, Emerson, and himself, and of which he was the first editor. He was joint-editor of the *North American Review* from 1863 to 1872. In 1877 he was appointed American minister at Madrid, and in 1880 he was transferred to London, whence he was recalled in 1885. He was very popular in Britain, was made D.C.L. of Oxford and LL.D. of Cambridge, besides being elected rector of St. Andrews University. Besides his poems, of which numerous editions have been published, and the *Biglow Papers*, his chief works are: *Conversations on some of the Old Poets*; *Among my Books*; *My Study Windows*; *Democracy*, and other Addresses, &c. His first wife, MARIA WHITE LOWELL (1821-1853), was a poet of considerable merit; a volume of her poems was privately printed after her death. Mr. Lowell died Aug. 12, 1891.

Lowestoft, a seaport, municipal borough, and watering-place of England, county of Suffolk, occupying the most easterly point of the kingdom. Since the construction of a harbour, piers, and docks, Lowestoft has risen to be a thriving and important town, and a chief seat of the fishing industry. The harbour is formed by two piers 1300 feet long. Lowestoft is well frequented for sea-bathing. Pop. 1891, 23,347.

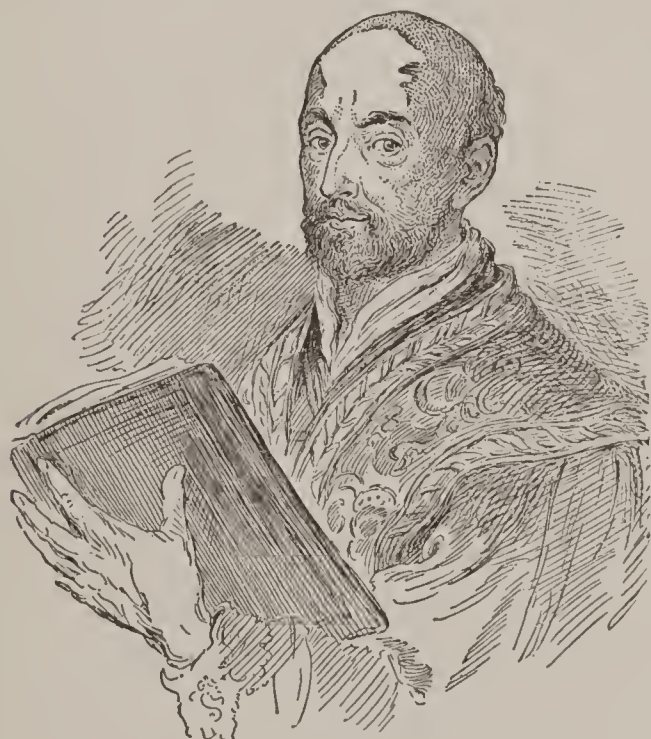
Lowth, ROBERT, English prelate, born in 1710, died in 1787. Educated at Winchester School and Oxford University, he was chosen professor of poetry in the latter in 1741. In 1744 he was appointed rector of Ovington in Hampshire. In 1753 he published his lectures on *The Sacred Poetry of the Hebrews*, and became famous as one of the first Biblical critics of his age. Preferments flowed rapidly upon him; and he became successively Bishop of Limerick, prebend of Durham, Bishop of St. David's, of Oxford, and of London. In 1778 he published *Isaiah, a New Translation*, with a preliminary dissertation and notes, which contributed to extend his fame.

Lowther Hills (lon'thèr), a range of Scottish hills extending across the south of Lanarkshire and north of Dumfriesshire to the southern borders of Peebles and Selkirk shires. Highest summits Green Lowther (2403 feet) and Lowther Hill (2377 feet).

Loxodromic Curve, the path of a ship when her course is directed constantly towards the same point of the compass, in a direction oblique to the equator, so as to cut all the meridians at equal angles. Mariners usually speak of lines of this kind as *rhumbs*.

Loyalty Islands, a group of islands in the Pacific Ocean, immediately east of New Caledonia, of which French colony they are appendages. They consist of the islands Uwea, Lifu, and Mari, with many small islands. Total area, 841 square miles. Pop. about 14,000.

Loyo'la, **IGNATIUS**, original name **INIGO LOPEZ DE RECALDE**, the founder of the order of the Jesuits, was descended of a noble Biscayan family, born at the castle of



Ignatius Loyola.

Loyola, Guipuscoa, in 1491, died 1556. He was attached in his youth as a page to the court of Ferdinand and Isabella, and trained up in all the vices and frivolities peculiar to his position. When still a young man he entered the army, and during the defence of Pampeluna in 1521 against the French he was severely wounded, and a long and tedious confinement was the result. The only books he found to relieve its tedium were books of devotion and the lives of saints. This course of reading induced a fit of mystical devotion in which he renounced the world, made a formal visit to the shrine of the Virgin at Montserrat, and vowed himself her knight (1522). After his dedication he made a

pilgrimage to Rome and Jerusalem, and from 1524 to 1527 attended the schools and universities of Barcelona, Alcala, and Salamanca. In 1528 he went to Paris, where he went through a seven years' course of general and theological training. Here in 1534 he formed the first nucleus of the society which afterwards became so famous, François Xavier, professor of philosophy, Lainez, and others having in conjunction with Loyola bound themselves together to devote themselves to the care of the church and the conversion of infidels. Rome ultimately became their head-quarters, when Loyola submitted the plans of his new order to Paul III., who, under certain limitations, confirmed it in 1540. (See *Jesuits*.) Loyola continued to reside in Rome and govern the society he had constituted till his death. He was beatified in 1607 by Paul V., and canonized in 1622 by Gregory XV.

Lozère (lo-zâr), a department of Southern France, bounded by Hante-Loire, Cantal, Ardèche, Gard, and Aveyron; area, 1996 sq. miles. The department is generally mountainous; highest peak, Mount Lozère, rising 4884 feet. The general character of the department is pastoral, immense numbers of sheep and goats being reared. The rivers Allier, Lot, and Tarn rise within the department, which belongs to the basins of the Loire, the Rhône, and the Garonne. Neither manufactures nor trade have made much progress. The capital is Mende. Pop. 1891, 135,527.

Luala'ba, a river in the interior of Southern Africa forming a portion of the Upper Congo.

Lubbock, **SIR JOHN**, fourth bart., F.R.S., LL.D., D.C.L., born in London 1834; joined his father's banking business in 1848, and became a partner in 1856. He entered parliament in 1870 as member for Maidstone; since 1880 he has represented London University. He is a recognized authority on financial and educational questions, and his name is associated with several important public measures, such as the Bank Holiday and Ancient Monuments Acts. He is also distinguished as a man of science, being author of *Prehistoric Times*; *Origin of Civilization*; *Origin and Metamorphoses of Insects*; *Monograph on the Thysanura and Collembola*; *British Wild Flowers in their Relation to Insects*; *Ants, Bees, and Wasps*. His father, **SIR JOHN WILLIAM**, born 1803, died 1865, was a well-known banker, and published several scientific works of con-

siderable value in their day, chiefly relating to astronomy.

Lübeck (li'bek), one of the free towns of Germany, and a constituent of the German Empire, stands on a low ridge at the confluence of the Wackenitz with the Trave, 38 miles north-east of Hamburg, and 12 miles from the Gulf of Lübeck, a bay of the Baltic. It was formerly surrounded by walls and bastions, which have been levelled down and converted into pleasant walks; but it is still entered by four gates, and furnishes striking specimens of the architecture of the 15th and 16th centuries. Among the buildings are, the cathedral, a structure of red brick, begun in 1173, surmounted by two spires 416 feet high, and containing a choir-screen regarded as one of the finest specimens of wood-carving in existence; the Marienkirche (St. Mary's Church), a fine specimen of early Gothic, the Ægidienkirche (St. Giles' Church), and the Petrikerche (St. Peter's Church); the town or senate house, an ancient Gothic building; the Hospital of the Holy Ghost (13th century); the Holstein Gate, with its two lofty towers; &c. There is a public library of about 100,000 vols. The manufactures are comparatively unimportant, but the trade is extensive, especially with Hamburg, the Baltic ports, and the interior of Germany. Lübeck possesses a territory of 116 sq. miles, and includes the port of Travemünde, and several isolated portions in Holstein and Lauenburg. It has a senate of 14 members and a council of burgesses of 120 members. It became an imperial free city in 1226, and about thirty years later it became the head of the Hanseatic League. (See *Hanse Towns*.) Pop. by the census of 1890 was 76,485.

Lübke (lüb'ké), WILHELM, art historian, born at Dortmund in Westphalia, 1826; professor of architecture at Berlin in 1857; of art-history at Zurich in 1861, at Stuttgart in 1866; called to a similar post at Karlsruhe in 1885. Author of a *History of Art*, *History of Sculpture*, &c.

Lublin, a town of Russian Poland, capital of the government of Lublin, 60 miles south-east of Warsaw. It is well built, has manufactures of cloth, candles, soap, &c., and a large trade. Among notable buildings are the cathedral, dating from the 13th century, and the town-hall. Pop. 38,816.—The government has an area of 6499 sq. miles; pop. 931,597.

Lubricant, any substance applied to sur-

faces that work against each other, to diminish friction. Lubricants may be either solid, semi-liquid, or liquid. Plumbago, grease, animal, vegetable, and mineral oils, simple or variously compounded, are the substances used.

Luca Giordano (also called *Luca Fa Presto*). See *Giordano*.

Lucan, in full MARCUS ANNÆUS LUCANUS, a Roman poet, nephew of the philosopher Seneca, born at Corduba, in Spain, about A.D. 38. Lucan went to Rome when a child, and having obtained celebrity at an early age by his talents, excited the jealousy of Nero, who himself aspired to literary honours, and was forbidden by the tyrant to recite in public. This induced Lucan to join the conspiracy of Piso. The plot was discovered, and Lucan died by having his veins opened (A.D. 65). Of his poems only his *Pharsalia*, an unfinished description of the civil war between Cæsar and Pompey, has come down to us. It possesses the highest poetical excellencies disfigured by great faults, which are easily explained by the youth of the author, and the fact that it probably did not receive his final revision.

Lucan, GEORGE CHARLES BINGHAM, EARL OF, born 1800, died 1888. He entered the army in 1816; accompanied the Russian army as a volunteer in 1828; succeeded his father 1839; was elected an Irish representative peer in 1840; was commander of a cavalry division in the Crimea, and wounded before Sebastopol. His name is conspicuously associated with the Balaklava charge of the Light Brigade. He was lieutenant-general in 1858; general in 1865; and field-marshal in 1887.

Lucania, an ancient division of S. Italy, which extended across from the Tyrrhenian Sea to the Gulf of Tarentum. The Lucanians were a branch of the Samnite nation, and were subdued by the Romans in B.C. 272. Lucania comprised the modern province of Basilicata, the greater part of Principato Citeriore, and the north part of Calabria.

Lucayos. See *Bahamas*.

Lucca, a town of Italy, capital of a province of same name, stands near the left bank of the Serchio, 37 miles N.N.W. Florence. It is well-built, with well-preserved fortifications and many interesting churches, including the cathedral of S. Martino. The Palazzo Pubblico, formerly the Ducal Palace, contains a picture-gallery. The manufactures consist chiefly of silk goods, woollen cloth, and oriental fezes. Pop. 20,421. First

an Etruscan, then a Ligurian town, Lucca afterwards became a Roman colony. It subsequently was annexed to the Frankish and German empires, and early in the 12th century, along with its territory, became a republic. During the middle ages its history is intimately connected with that of Florence and Pisa. It was occupied by the French in 1799, and together with Piombino was formed into a principality in 1805, and given by Napoleon to his sister Elise. The Congress of Vienna in 1814 erected it into a duchy, and gave it to the Infanta Maria Louisa, duchess of Parma, whose son ceded it to Tuscany. In 1860 it became part of the Kingdom of Italy.—The province of Lucca is bounded N. by Massa e Carrara and Modena, E. by Firenze, S. by Pisa, W. by the Mediterranean; area, 577 sq. miles. It is mountainous in the north, but, on the whole, is better cultivated than most parts of Italy. Silk, oil, corn, and fruits are the chief productions. Pop. 284,287.

Lucena (lō-thā'nā), a city of Spain, in Andalusia, in the province and 30 miles S.S.E. of Cordova. Pop. 19,882.

Lucera (lō-chā'rā; ancient *Luceria*), a town of South Italy, province of Foggia, 11 miles W.N.W. of Foggia. The principal edifices are a cathedral, once a mosque, the castle, an interesting example of a mediæval stronghold, &c. Pop. 14,832.

Lucerna'ria (Latin, *lucerna*, a lamp), the typical example of the Lucernaridæ, an order of the Hydrozoa, nearly allied to the Medusidæ or jelly-fishes. The most familiar member is the *Lucernaria auriculā*, a little organism somewhat bell-shaped, and which is frequently found adhering by the smaller end to sea-weeds, &c. In the centre of the bell-shaped end is an opening into the cavity of the body, which is the stomach. It can detach itself at will and swim freely about by contracting and expanding the bell-shaped disc or 'umbrella,' as it is technically called.

Lucerne, **LUZERN** (lō-sern', lō'tsern), a city of Switzerland, capital of a canton of the same name, beautifully situated on the margin of Lake Lucerne and on the Reuss, where it emerges from the lake. On the land side the town is surrounded by walls and watch-towers, and the river is spanned by four bridges, two of which are roofed-in and covered with ancient paintings. The Court Church, Jesuit Church, and the town-house are among the most interesting buildings, the latter containing a picture gallery

and museum. The 'Lion of Lucerne,' a monument by Thorwaldsen to the Swiss guards who fell in Paris in 1792 while defending the Tuileries, and the glacier-garden, containing relics of the ice period, are objects of interest. Lucerne is one of the three seats of the Swiss Diet, has an important grain market and manufactures of silk and cotton fabrics, and of carriages. Pop. 26,819.—The canton is bounded by the cantons of Aargau, Zug, Schwyz, Unterwalden, and Bern; area, 587 square miles. The surface is very much broken by ramifications of the Bernese Alps, but none rise above the line of perpetual snow. The Tomlishorn, the culminating point of Mount Pilatus, and of the canton, is 7116 feet above sea-level. The chief rivers are the Reuss, the Aa, Suren, Wigger, &c. Lucerne is well supplied with lakes. Within its own boundaries it has those of Sempach and Baldegg, with many more of smaller size; with Zug it shares the Lake of Zug, and with Unterwalden and Schwyz the Lake of Lucerne. The soil generally is fertile. The pastures are extensive and excellent. German is the language spoken, and by far greater part of the inhabitants profess the Roman Catholic religion. Pop. 134,806.

Lucerne, **LAKE OF**, **VIERWALDSTÄTTER-SEE**, or **LAKE OF THE FOUR FOREST CANTONS**, a Swiss lake bounded by the cantons of Uri, Schwyz, Unterwalden, and Lucerne, and noted for its magnificent scenery and historical associations. It is nearly cruciform in shape, the bays of Lucerne, Küsnacht, and Alpnach forming the head and arms, while the foot is formed by the bay of Buochs and lake of Uri. Length from Lucerne to Flüelen 27 miles, from Alpnach to Küsnacht at the extremities of the arms about 14 miles; width from 1 to 3 miles; greatest depth 510 feet.

Lucerne (*Medicāgo*), a genus of leguminous plants containing at least ninety species. The purple medick (*M. sativa*) is a valuable pasture and forage plant extensively cultivated in some of the chalky districts of England and France, and also in America. It is perennial and yields two or more crops in the year. In California it is known by the Spanish name of *Alfalfa*.

Lucia, **St.**, a Christian virgin-martyr of Syracuse who lived in the reign of Diocletian. She is the patroness of the labouring poor, and is invoked for eye disease.

Lucia, St., BAY OF, an almost landlocked bay on the coast of Zululand, E. South Africa, lat. 28° S.

Lucia, St., one of the British West India Islands, 21 miles north by east of St. Vincent, and 20 miles south of Martinique; area about 245 square miles. It is of volcanic origin, and has generally an elevated, rugged, and mountainous surface. It is very fertile, and has some splendid scenery, but is very unhealthy and infested with venomous serpents and insects. The chief exports are sugar, rum, and cocoa. Castries, the capital, has 3500 inhabitants. Pop. 45,000, of whom about 900 are white.

Lu'cian, a Greek satirist and humorist, who was born at Samosata, on the banks of the Euphrates, and lived between A.D. 120 and 200. Little is known of his life, but he is said to have made money as a rhetorician or a lawyer, to have spent much time in travelling, and to have lived for long intervals in Athens. His works are of a witty and satirical character, the most popular being those known as the *Dialogues*, in which he ridicules the popular mythology and the philosophical sects, particularly his *Dialogues of the Gods and of the Dead*.

Lucifer (or in Greek, *Phōsphoros*, both meaning *light-bearer*), a name anciently given to the planet Venus as the morning star. The term is used figuratively by Isaiah (xiv. 12) and applied to the Babylonian king, but it was mistaken by the commentators for a reference to Satan.

Lucifer-match. See *Matches*.

Lucil'ius, CAIUS ENNIUS, a Roman knight, grand-uncle to Pompey the Great; born at Suessa B.C. 148, died at Naples about 103 B.C. He is considered the inventor of the Roman satire, because he first gave it the form under which this kind of poetry was carried to perfection by Horace, Juvenal, and Persius. Of thirty satires which he wrote only some fragments have been preserved.

Luckenwalde (lŭk'en-vál-dé), a town of Prussia, 31 miles south of Berlin. It has cloth manufactories and numerous other industrial establishments. Pop. 16,109.

Lucknow' (more correctly LAKHNAU), a city of Hindustan, capital of Oude, 610 miles W.N.W. of Calcutta, on both banks of the Gumti, here crossed by four bridges, two of which were built by native rulers, and two by the British since 1856. It ranks fourth in size among British Indian cities, being next after Calcutta, Madras, and

Bombay. It presents a picturesque view from a distance, and has some good streets and interesting edifices. Among the most notable buildings are the Kaisarbagh, a palace built by King Wajid Ali in 1850 at a cost of £800,000, now occupied as government offices; the Imâmbarra or mausoleum of Asoof ud Dowlah, now an arsenal and store-houses; the great mosque called the Jamâ Masjîd, now a jail; the Hoseinabad or Small Imâmbarra, with the mausoleum of Mohammed Ali; the Martinière founded by General Martin, and clothing and educating 120 boys, the Canning College, and several English schools; also St. John's church, American and Roman Catholic churches; library, hospitals, lunatic asylum, &c. Lucknow was one of the chief scenes of the Sepoy mutiny. At the beginning of the mutiny the Residency was fortified by Sir Henry Lawrence, and after his death (4th July, 1857) it was closely besieged by the rebels till relief was brought by Havelock and Outram. The relieving force was only a small one, however, and the British were again besieged, partly in the Residency, partly in a walled garden called the Alambâgh. In the middle of October Sir Colin Campbell gained possession of the place after severe fighting; but as it seemed impossible to hold it with the troops at his disposal he left Sir James Outram to defend the Alambâgh, and removed the civilians, women and children to Cawnpore. At last, in March 1858, Sir Colin returned with a sufficient force, completely defeated the rebels, and permanently recovered the town. Population, 1891, 272,590.

Lucre'tia, in Roman legendary history, a lady of distinguished virtue who was outraged by Sextus, son of Tarquinius Superbus, king of Rome. She stabbed herself, and her death was the signal for a revolution, by which the Tarquins were expelled from Rome and a republic formed.

Lucre'tius CARUS, TITUS, Roman philosophic poet, born about 98 B.C., died 55 B.C. He is said to have died by his own hand, but about his life almost nothing is known. He is admitted to be one of the greatest of Roman poets for descriptive beauty and elevated sentiment. We possess of his composition a didactic poem, in six books, *De Rerum Natura* (On the Nature of Things), in which he exhibits the cosmical principles of the Epicurean philosophy. The best English edition of Lucretius is that of H. A. J. Munro, with translation.

Lucullus, LUCIUS LICINIUS, a distinguished Roman naval and military commander, born about B.C. 115, died before B.C. 56. He distinguished himself greatly in his various victorious campaigns against Mithridates, king of Pontus, from the time of Sulla to B.C. 66, when he was supplanted by Pompey. He thenceforward lived in luxurious retirement on the coast of Campania. His house was enriched with a valuable library and works of art, which were freely opened to the curious and learned, among whom was his friend Cicero.

Luddites, a name given to rioters in 1811–16 in Yorkshire, Lancashire, and Nottingham, who attributed the prevailing distress to the introduction of machinery. During these years the above counties were in a perpetual state of disturbance, and much damage to machinery was done by the rioters. They took their name from Ned Ludd, a half-witted lad who made himself notorious by destroying stocking-frames. After the peace, with the return of prosperity, the riots ceased.

Lüdenscheld (lü'den-shīt), a town of Prussia, province of Westphalia, 21 miles south-west of Arnsberg, with extensive manufactures of metal goods and hardware. Pop. 15,067.

Luderitzland, a German colony on the west coast of South Africa, annexed by the German government in 1884–85. See *Angra Pequena*.

Ludhiana (lud-hi-ä'na), a town of India, province of Punjab, Sutlej; a great central grain mart. Pop. 44,163.

Ludington, a city in Michigan, on Lake Michigan, at mouth of Marquette R. Pop. 1890, 7517. It has a fine harbour.

Lud'low, a municipal borough of England, in Shropshire, on the river Teme, 27 miles south by east of Shrewsbury. The remains of the ancient castle of Ludlow have an interesting and picturesque appearance. The borough returned one member to parliament till 1885; it now gives name to the Ludlow or southern parliamentary division of Shropshire. Pop. 5035.

Ludlow, EDMUND, the eldest son of Sir Henry Ludlow, was born about 1620. He served with distinction in the parliamentary army, and succeeded Ireton in the government of Ireland in 1651. He opposed Cromwell's assumption of the protectorate, and agitated in favour of a republic. On the approach of the Restoration he retired to Switzerland, and died in exile 1693. He is the author of valuable Memoirs.

Ludlow Rocks, in geology a portion of the upper Silurian rocks, characteristically developed at Ludlow in Shropshire.

Ludwig, the German form of the name *Lewis*, *Louis*. See *Louis*.

Ludwigsburg (lud'vihs-burh), a town of Germany, in Würtemberg, 8 miles north of Stuttgart. It is the second royal residence of the kingdom, and has a large royal palace. Pop. 1890, 17,418.

Ludwigshafen (lud'vihs-hä-vn), a town of Rhenish Bavaria, on the left bank of the Rhine, opposite Mannheim, with which it communicates by a railway bridge and steam ferry. It was founded in 1843 by Louis I. of Bavaria, and has become a flourishing town with numerous chemical and other works. Pop. 1890, 33,216.

Lufji. See *Rufji*.

Luga'no, a town of Switzerland, in the canton of Ticino, beautifully situated on the northshore of the lake of same name, 15 miles north-west of Como. Pop. 6129.—The LAKE OF LUGANO, partly in canton Ticino and partly in Italy, between Lakes Como and Maggiore, into the latter of which it discharges itself, is about 20 miles long by 1½ mile broad. Its scenery is of a wild and romantic description.

Lugansk', a Russian town, gov. of Ekaterinoslaff, on the Lugan, a branch of the Donetz, 300 miles N.N.W. of Taganrog. It is the chief centre of an important coal and iron district. Pop. 14,931.

Lugdu'num, the ancient name of Lyons and of Leyden.

Lugger, a vessel having either two or



Lugger.

three masts and a running bowsprit, the masts carrying each one or two lug-sails. There are also two or three jibs.

Lugo, a town of Northern Spain, capital of province of same name, on the left bank of the Miño, 46 miles west by south of Santiago. It is surrounded by ancient walls, which now serve as a promenade; has a Gothic cathedral of the 12th century, several old churches, an episcopal palace, &c. Pop. 19,701.—The province has an area of 3788 sq. miles; pop. 423,723.

Lugo, a town of Italy, prov. of Ravenna, 30 miles S.E. of Ferrara. It has an important annual fair, and a trade in flax, wine, brandy, &c. Pop. 9198.

Lugos (lō'gosh), a Hungarian town on the Temes, 32 miles E.S.E. of Temesvar. It is the seat of Greek and Latin bishops, and has an active trade. Pop. 12,370.

Lug-sail, a quadrilateral sail bent upon a yard which hangs obliquely to the mast.

Lugworm. See *Lobworm*.

Luini (lū-ē'nē), BERNARDINO, painter of the Lombard school, and the most distinguished pupil of Leonardo da Vinci, was born at Luino, a village on Lake Maggiore, about 1475; died perhaps about 1540. His works both in oil and fresco are much admired. Of the latter one of the most important is a Crucifixion of great size and with various supplementary scenes on the wall of a chapel at Lugano. He has also some merit as a poet, and is said to have written a treatise on painting. Two of his sons, Evangelista and Aurelio, and a brother named Ambrogio had a reputation as painters.

Luitprand. See *Liutprand*.

Luke, St., the evangelist, author of the Gospel which bears his name and of the Acts of the Apostles. He was probably born at Antioch in Syria; was taught the science of medicine, but the tradition that he was also a painter is doubtful. The date of his conversion is uncertain; he is supposed to have been one of the seventy disciples, and also one of the two who journeyed to Emmaus with the risen Saviour. He was for several years a companion of the apostle Paul in his travels, so that in the Acts of the Apostles he relates what he himself had seen and participated in. (See *Acts of the Apostles*.) Luke is apparently mentioned three times in the New Testament: Col. iv. 14; 2 Tim. iv. 11; Philem. 24. He lived to an advanced age, but whether he suffered martyrdom or died a natural death it is impossible to determine. The Gospel of St. Luke was written probably about 58–60. It is addressed to a certain Theophilus, and records various facts connected with the

early life of Jesus which were probably furnished to the writer by Mary herself. It is first quoted by the church writers Justin Martyr and the author of the Clementine Homilies, and at the time of Irenæus and Tertullian the gospel in its present form was fully accepted. See *Gospel*.

Luke of Leyden (*Lucas van Leyden*), Dutch painter and engraver, born at Leyden 1494, died 1533. He was an intimate friend of Albert Dürer, and executed many paintings in oil, water-colours, and on glass; likewise a multitude of engravings, which spread his fame widely. The fullest and most beautiful collection of engravings by this master is in the library at Vienna. His paintings are to be met with in many galleries; the principal in Leyden, Vienna, Dresden, Munich, and Florence.

Lully, JEAN BAPTISTE, musical composer, born at Florence 1633, died at Paris 1687. At ten years of age he became page to Mdlle. de Montpensier, niece of Louis XIV. In course of time he became court musician and leader of the king's band. In 1672 he had the direction of the Royal Academy of Music, from which time dates the foundation of the grand opera. He wrote numerous operas, motets, and other compositions, but his fame now chiefly rests on his overtures, a species of composition of which he is said to have been the inventor.

Lully, RAYMOND (*Doctor Illuminatus*), a distinguished scholastic philosopher, born in Majorca about 1235, died in Algeria 1315. When about 30 years of age he renounced the world and devoted himself to philosophy and religion. Encouraged by visions, he undertook the task by studying the eastern languages in order to convert the Moslems. For this purpose he made several journeys into Northern Africa, during one of which he was stoned to death. He was canonized in 1419. The number of his works is usually estimated at 300. They include treatises on logic, metaphysics, grammar, theology, casuistry, geometry, astronomy, medicine, &c., and the so-called 'Lullian art.' The *Ars Lulliana*, once extensively taught throughout Europe, consists mainly in categorizing ideas and combining them mechanically, by which means Lully thought to exhaust their possible combinations.

Lumba'go (from *lumbus*, the loins), rheumatism or rheumatic pains affecting the lumbar region, and often disabling a person. See *Rheumatism*.

Lumber, the common term in N. America for timber sawn up for market, including laths, deals, planks, shingles, &c.

Luminiferous Ether, a hypothetical medium of extreme tenuity and elasticity, supposed to be diffused throughout all space, as well as among the molecules of which solid bodies are composed, and to be the medium of the transmission of light, heat, and other forms of energy. From the extreme facility with which bodies move about in this medium it might be called a fluid; but the undulations which it serves to propagate are not such as can be propagated by fluids. Its elastic properties are rather those of a solid; and its waves are analogous to the pulses which travel along the wires of a piano rather than to the waves of extension and compression by which sound is propagated through air. See *Undulatory Theory*.

Luminosity. See *Flame* and *Phosphorescence*.

Lump-fish, or **SUCKER** (*Cyclopterus lumpus*), an acanthopterygious fish, so named from the clumsiness of its form. The back is arched and sharp, the belly flat, the body covered with numerous bony tubercles, the ventral fins modified into a sucker, by means of which it adheres with great force to any substance to which it applies itself. Before the spawning season it is of a brilliant crimson colour, mingled with orange, purple, and blue, but afterwards changes to a dull blue or lead colour. It sometimes weighs 7 lbs., and its flesh is very fine at some seasons, though insipid at others. It frequents the northern seas, and is also called *Cock-paddle*, *Lump-sucker*, and *Sea-owl*.

Luna, the Latin name for the moon, among the Greeks *Selēnē*. Her worship is said to have been introduced among the Romans in the time of Romulus.

Lunacy. See *Insanity*.

Lunacy, in law. "A lunatic," says Blackstone, "is one that hath had understanding, but by disease, grief, or other accident, hath lost the use of his reason." In the United States the Legislature exercises a protective authority over idiots and lunatics. The statutes of the different States provide that such persons may be put under guardianship; and if a competent judicature have found the fact of lunacy in the prescribed mode, and have appointed a guardian, the fact of lunacy is held to be conclusively proved. Until the

contrary be shown, every man is presumed to be of sound mind. In criminal cases lunatics are not chargeable for their own acts, if committed when labouring under defect of understanding. By the common law, if a man in his sound memory commits a capital offence, and before arraignment for it becomes mad, he ought not to be arraigned for it, because he is not able to plead with that caution that he ought. But, in general, partial unsoundness will form no defence. See *Lunatic Asylums*.

Lunar Caustic, nitrate of silver. See *Silver*.

Lunar Theory, the mathematical treatment of perturbations in the moon's motion due to the attraction of the sun, the earth, and the planets. See *Moon*.

Lunar Year. See *Year*.

Lunatic Asylums, houses established for the treatment of insane persons. Some are established by law, others by the endowments of charitable donors, while others are private establishments. Until near the close of last century many lunatics were allowed to wander at large, exposed to all the arbitrary cruelty to which their defenceless condition made them liable, while those who were confined in asylums were in a still worse case. Chains, whipping, and confinement in dark dungeons were among the ordinary discipline of these establishments. The reformation of this unnatural system was begun in France by Philippe Pinel, a benevolent physician; and in England a parliamentary inquiry in 1815 into the barbarities hitherto practised in lunatic asylums led to a slow but gradual improvement. Lunatic asylums, whether public or private, are now under the control of officers appointed under special statutes, and lunatics must be visited at least once a year by medical and legal visitors. The general conduct of lunatic asylums is now brought more into harmony with humanity and common sense. Violence and undue coercion have been generally abandoned. The total number of insane persons treated in public and private institutions during the year 1889, in the United States, was 97,535. There were, in the same year, 38 private institutions for the insane.

Lund, a town of Sweden, län Malmö, about 8 miles from the Sound, and 24 miles east of Copenhagen. It is the see of an archbishop, has an ancient cathedral, and a university possessed of a library of nearly 120,000 volumes. Pop. 1892, 15,091.

LUNDY ISLAND — LUNGS.

Lundy Island, a granitic island belonging to England, county Devon, at the entrance of the Bristol Channel, $2\frac{1}{2}$ miles long and 1 broad; area, about 1000 acres, mostly in pasturage. On it is a lighthouse visible for 30 miles. Pop. 177.

Lüneburg (lü'ne-burh), a town of Prussia, prov. of Hanover, on the Ilmenau, 28 miles south-east of Hamburg. There are various interesting buildings, including the town-house, a structure dating in part from the 13th century. Near the town are extensive gypsum and lime quarries and a salt mine. Pop. 19,336.

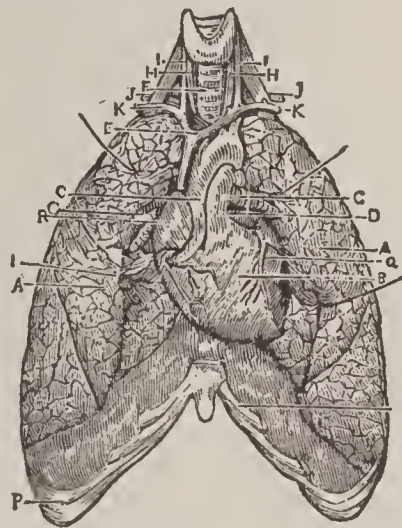
Lunel, a town of France, department of Hérault, 15 miles E.N.E. Montpellier. Pop. 6120.

Lunette', in the art of fortification, a detached out-work having two faces and two flanks. It is often used in field fortifications, or before the glacis of a permanent fortress to protect a weak point.

Lunéville (lü-nā-vēl), a town of Eastern France, department of Meurthe-et-Moselle, near the junction of the Vezouse with the Meurthe, 15 miles E.S.E. Nancy. It has generally straight streets, a palace, built by Leopold, duke of Lorraine, and now partly serving as cavalry barracks; manufactures of gloves, pottery, &c. The treaty of peace in 1801, by which, as a consequence of the battle of Marengo, the Rhine became the French frontier, was signed here. Pop. 18,136.

Lungs, the sole breathing organs of reptiles, birds, mammals, and in part of amphibians (frogs, newts, &c.), the latter forms breathing in early life by branchiæ or gills, and afterwards partly or entirely by lungs. The essential idea of a lung is that of a sac communicating with the atmosphere by means of a tube, the *trachea* or windpipe, through which air is admitted to the organ, and through structural peculiarities to its intimate parts, the air serving to supply oxygen to the blood and to remove carbonic acid. In the Mammalia, including man, the lungs are confined to and freely suspended in the cavity of the thorax or chest, which is completely separated from the abdominal cavity by the muscular diaphragm or 'midriff.' In man the lungs are made up of honeycomb-like cells which receive their supply of air through the bronchial tubes. If a bronchial tube is traced it is found to lead into a passage which divides and subdivides, leading off into air-cells. The walls of these air-cells consist of thin,

elastic, connective tissue, through which run small blood-vessels in connection with the pulmonary artery and veins. By this arrangement the blood is brought into contact with, and becomes purified by means of the air. The impure blood enters at the root of the lung through the pulmonary



Human Lungs, Heart, and great Vessels.

A, Lungs with the anterior edges turned back to show the heart and bronchi. B, Heart. C, Aorta. D, Pulmonary artery. E, Ascending vena cava. F, Trachea. G G, Bronchi. H H, Carotid arteries. I I, Jugular veins. J J, Subclavian arteries. K K, Subclavian veins. P P, Costal cartilages. Q, Anterior cardiac artery. R, Right auricle.

artery at the right side of the heart, and passes out purified through the pulmonary veins towards the left side of the heart. Both lungs are inclosed in a delicate membrane called the *pleura*, which forms a kind of double sac that on one side lines the ribs and part of the breast-bone, and on the other side surrounds the lung. Pleurisy arises from inflammation of this membrane. The lungs are situated one on each side of the heart, the upper part of each fits into the upper corner of the chest, about an inch above the collar-bone, while the base of each rests upon the diaphragm. The right lung is shorter and broader than the left, which extends downwards further by the breadth of a rib. Each lung exhibits a broad division into an upper and lower portion or *lobe*, the division being marked by a deep cleft which runs downwards obliquely to the front of the organ; and in the case of the right lung there is a further division at right angles to the main cleft. Thus the left lung has two, whilst the right lung has three lobes. These again are divided into *lobules* which measure from $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter, and consist of air-cells, blood-vessels, nerves, lymphatic vessels, and the tis-

sue by which the lobules themselves are bound together. The elasticity of the lungs by which they expand and expel the air is due to the contractile tissues found in the bronchial tubes and air-cells, this elasticity being aided by a delicate, elastic, surface-tissue. (See *Respiration*.) The lungs are popularly termed 'lights,' because they are the lightest organs in the body, and float when placed in water, except when they are diseased; a characteristic this which is applied in medical jurisprudence as a test whether an infant has respired or not. Among the diseases which affect this organ are pleurisy, pneumonia, pleuro-pneumonia, consumption, &c. See those terms.

Lungwort, *Pulmonaria officinālis*, nat. order Boraginaceæ, a common garden flower, having red and purple tubular blossoms, and leaves speckled like diseased lungs, hence an old-fashioned remedy in pulmonary diseases. A kind of hawkweed (*Hieracium pulmonarium*) and a lichen (*Sticta pulmonaria*) receive the same name.

Luperca'lia, a Roman festival celebrated annually in honour of Luperus, an ancient pastoral god, afterwards identified with the Arcadian Pan. It was celebrated on the 15th Feb. at the Lupercal, a grotto in the Palatine Hill at Rome. Goats were sacrificed, and two youths were arrayed in the skins. With thongs in their hands they ran through the streets of the city striking all persons they met, particularly women, who believed that a blow from the thong prevented sterility.

Luper'cus. See *Lupercalia*.

Lupine (*Lupinus*), a very extensive genus of hardy annual, perennial, and half-shrubby plants, some of which are cultivated in gardens for the sake of their gaily-coloured flowers. They belong to the nat. order Leguminosæ.

Lu'pulin, the fine yellow powder of hops, which contains the bitter principle. It consists of little round glands, which are found upon the stipules and fruit, and is obtained by drying, heating, and then sifting the hops. It is largely used in medicine.

Lupus, in medicine, a slow non-contagious tubercular affection, occurring especially about the face, and commonly ending in ragged ulcerations of the nose, cheeks, forehead, eyelids, and lips. It is also called *Noli-me-tangere*.

Luray Cavern, a remarkable cavern in the state of Virginia, near the village Luray. It contains many chambers, and

is exceedingly rich in stalactite formations. Pop. of Luray village, 2809.

Lurcher, a dog that lies in wait for game, as hares, rabbits, partridges, &c., drives them into nets, runs them down, or seizes them. This species of dog is said to be descended from the shepherd's dog and the greyhound, and is more used by poachers than sportsmen.

Lurgan, a market-town of Ireland in the county of Armagh and province of Ulster, 20 miles south-west of Belfast. It contains a handsome Episcopal church, a Roman Catholic church, and several other places of worship; a nunnery; a town-hall, courthouse, mechanics' institute, tobacco factory, breweries, linen factories, &c. Pop. 10,135.

Luristan', a mountainous prov. of Western Persia, with an area of about 20,000 sq. miles. It is named after the Luri, a race divided into many tribes, all migratory and warlike. The only town is Khorramabad, situated in a fruitful plain south of Hamadan.

Lurlei. See *Lorelei*.

Lusa'tia (in German, *Lausitz*), an extensive region of Germany, now included partly in Prussia, partly in the kingdom of Saxony.

Luscin'ia, a genus of insessorial birds of the thrush family (*Turdidæ*), to which the nightingale (*L. philomela*) belongs.

Lushai Hills, a wild district on the north-east frontier of India, lying along the southern side of the Assam district of Cachar, the east side of the Bengal district of Chittagong, and extending on the east into Burmah. This territory is occupied by numerous nomadic tribes called Lushais or Kukis, who, since the expedition of 1871, have been submissive to British rule. They bring down to the markets on the plains ivory, raw cotton, bees'-wax, and caoutchouc.

Lusiads. See *Camœns*.

Lusitania, the ancient name of a large district in the Iberian peninsula, comprising part of Portugal and part of Spain. The inhabitants, named Lusitani, were brave and warlike in their resistance to the Roman invasion.

Lustration, purification; in particular the solemn purification or consecration of the Roman people, by means of an expiatory sacrifice. As this lustration took place at the end of every five years *lustrum* came to signify a period of five years.

Lute, a stringed musical instrument of the guitar kind, formerly very popular in Europe. It consists of four parts, viz. the

LUTHER.

table or belly with a large sound-hole in the middle; the body, ribbed like a melon, having nine or ten ribs or divisions; the neck, which has nine or ten stops or frets which divide the strings into semitones; and the head or cross, in which are fitted the pegs or screws for tuning the strings, of which there are five or six pairs, each pair tuned in octaves or unisons. The strings are struck by the fingers of the right hand and stopped on the frets by those of the left.

Luther (lō'thēr; Ger. pron. lö'tér), **MARTIN**, the great religious reformer of Germany, was born at Eisleben, November 10, 1483, and died there on the 18th Feb., 1546. His father, a miner in humble circumstances, soon after his birth removed with his family to Mansfield, where young Martin was brought up, piously but with some severity. At the age of fourteen he was sent to school at Magdeburg, whence he was sent in 1499 to Eisenach. At school he made rapid progress in Latin and other studies. In 1501 he entered the University of Erfurt; and in 1505 received the degree of Master. About this time he discovered in the library of the university a Latin Bible, and found, to his no small delight, that it contained more than the excerpts in common use. He was destined by his father to the law, but his more intimate acquaintance with the Bible induced him to turn his attention to the study of divinity, with the view of entering monastic life. Contrary to the wishes of his father he entered the monastery of the Augustines at Erfurt in 1505. In 1507 he was consecrated priest, and in 1508, by the influence of his patron, Staupitz, who was provincial of the order, he was made professor of philosophy in the new University of Wittenberg. In 1510 he visited the court of Pope Leo X. at Rome on business connected with the order. Returning to Wittenberg he was made a Doctor of Theology in 1512, and here his profound learning and powerful eloquence drew large audiences. At that time he had no controversy with the pope or the church, but the arrival in 1517 of John Tetzel in Wittenberg selling indulgences for sins roused the fiery energy of Luther, and caused him to draw up his famous protest in ninety-five propositions, which he nailed to the church-door in Wittenberg. The result was that the sale of indulgences ceased, Tetzel fled, and a great religious commotion spread rapidly through Germany. Luther was summoned to Rome

to explain his heretical proceedings, but refused to go; nor were the efforts of Cardinal Cajetan able to effect a reconciliation between him and the pope. His dispute with Dr. Eck at Leipzig in 1519, in which he denounced indulgences, and questioned



Martin Luther.

the authority of the pope, was followed in 1520 by a bull of anathema—a document which Luther straightway burned publicly in Wittenberg. This open defiance of Rome required him to vindicate his conduct, which he did in a pamphlet addressed to the Christian Nobles of Germany, with the result that many of the worthiest rallied to his aid. When summoned to appear before the German emperor, Charles V., at the Diet of Worms (1521), Luther appeared, acknowledged his writings, made an eloquent defence, but refused to recant. When he retired in triumph from Worms he was met by a friendly troop of soldiers belonging to Fredrick the Elector of Saxony, who conveyed him to the castle of Wartburg, where he lay in concealment for nearly a year. Here he employed his time in translating the New Testament into German, but when he heard that disturbances had been excited in Wittenberg on the question of images, he could no longer bear the restraint of inaction. Returning suddenly, and at great danger to himself, Luther succeeded in quieting the people by means of a wise and patient moderation. In 1524 he laid aside his cowl as a priest of the Roman Church, and in 1525 married Catharina von Bora, one of nine nuns who had renounced their religious vows under his teaching. The wisdom of this marriage was doubted by his friends, but his home-life and the birth of six children, contributed greatly to the happiness of the reformer. From the

year 1521 Luther had been busy translating the Bible into German with the aid of Melancthon and others, and the great task was completed in 1534. This important work, taken in connection with the Protestant Confession made at Augsburg in 1530, served to establish the reformer's doctrines in Germany, and closed the important part of his public life. He continued, however, till the end his private work of teaching, preaching, and writing. The massive character of the German reformer lay along simple lines, and found its full and direct expression in his work. The learning of Calvin, and the balanced judgment of Melancthon were not his, but a vivid practical insight enabled him to mark the abuses of the Roman Church, and his fervid energy urged him to reform them. Behind all the zeal of the reformer he had much lowly human sympathy, humour, tenderness, and a love of homely things. This side of his character is most clearly seen in his *Letters* and *Table-Talk*. His German writings were varied and extensive.

Lutherans, the adherents of Luther, a term now applied to one of the great sections into which the Protestant Church on the continent of Europe is divided, the other being known as the Reformed or Calvinists. The doctrinal system of the Lutheran Church is contained in the Augsburg Confession (which see), and other documents, including the two catechisms of Luther. The fundamental doctrine is that we are justified before God, not through any merits of our own, but through faith in His Son. In the eucharist the belief of the Lutherans is known as consubstantiation (which see). Lutheranism extended in the time of its founder over the greater part of Germany, and became also the established religion of Sweden, Norway, and Denmark. The membership of the Lutherans is estimated at 40,000,000. In America they have a membership of about 1,000,000.

Luton, a municipal borough of England, county of Bedford, on the river Lea, now giving name to a parl. div. of the county. The town has a town-hall, corn-exchange, market-house, and a large ancient and handsome parish church (St. Mary's), restored in 1865. There are extensive manufactories for straw hats and bonnets, Luton being the principal seat of that manufacture. Pop. 1891, 30,005.

Lutra, a genus of carnivorous animals, comprising the otters.

Lüttringhausen (lüt'ring-hou-zn), a town of Rhenish Prussia, in the government of Düsseldorf, with manufactures of woollens, cottons, &c. Pop. 10,200.

Lützen (lüt'zn), a small town of Prussian Saxony, in the government of Merseburg. Pop. 3500. Two battles were fought in its neighbourhood. The first took place on the 16th November, 1632, between the Swedes under Gustavus Adolphus, and the imperialists under Wallenstein, the former being victorious. The second was fought May 2, 1813, between the allied Russian and Prussian armies and the French under Napoleon, who maintained his position, though at a loss of 12,000 men, against 10,000 of the allies.

Luxation, in surgery, the displacement of a bone, a dislocation.

Luxembourg (lük-sân-bör), FRANÇOIS HENRI DE MONTMORENCY-BOUDEVILLE, DUKE OF, Marshal of France, born in 1628, died 1695. He served when young under the Prince of Condé; was made a duke and peer of France; and, having gained the battle of Senef in 1674, a marshal of France. In the war of France against England, Holland, Spain, and Germany he won the three great battles of Fleurns (July 1, 1690), Steenkerken (Aug. 3, 1692), and Neerwinden (July 29, 1693).

Luxemburg, GRAND-DUCHY OF, a territory connected with the Dutch crown, bounded north and east by Rhenish Prussia, south by France, and west by Belgium; greatest length, north to south, 55 miles; greatest breadth, 34 miles; area, 998 sq. miles. It forms part of the plateau of the Ardennes, and its drainage belongs almost entirely to the basin of the Moselle. Grain and other crops are raised; cattle and horses are exported; iron ore is mined and smelted. The inhabitants are mostly of German origin, but French is the language of the educated classes and of business. The people are for the most part Roman Catholics. The King of Holland is Grand-duke of Luxemburg, which is governed according to its own constitution. In the treaty of London (1867) it was declared to be neutral territory. Pop. 213,283. Luxemburg, in early times, was much more extensive than at present. It was converted into a grand-duchy in 1814, and given to the King of Holland. In 1830 part of it became a Belgian province (area 1706 square miles; pop. 217,447). The remainder, continuing with the Dutch, forms the present grand-duchy. See next article.

Luxemburg, the capital of the above grand-duchy, 117 miles south-east of Brussels, is bounded on two sides by a ravine about 200 feet deep, and is approached by a long and lofty viaduct. It was formerly one of the strongest fortresses in Europe, but its defences were dismantled in accordance with the treaty of London (1867). The town is well built; and contains town-houses, old and new; the government-house, house of deputies, town library, the old abbey cathedral, &c. Pop. 1890, 18,187.

Luxor, a village of Upper Egypt, on the right bank of the Nile, about 2 miles south of Karnak. It contains a splendid ancient temple, and is the head-quarters from which to visit the extensive remains of ancient Thebes.

Luynes (lù-ēn), CHARLES D'ALBERT, DUKE DE, favourite and premier of Louis XIII. and Constable of France, born in 1578. He caused the exile of the king's mother, and for a short time had absolute control in the government. He died in 1621, without having experienced any visible loss of favour or influence.

Luzon', or LUÇON', a Spanish island, the largest of the Philippines. Its greatest length is about 540 miles; its greatest breadth about 125 miles; area estimated at 57,500 sq. miles. Two great mountain chains, the Sierra Madre and Cordillera de Caravillos, run north and south, and rise to a height in some cases of more than 7000 ft. They are of volcanic origin, and many disastrous eruptions have taken place. Rivers and lakes are numerous. Vegetation is luxuriant, and the vast forests contain ebony, cedar, and other valuable trees. Luzon also produces abundant crops of rice, Manilla hemp, tobacco, coffee, ginger, and pepper. There are few wild animals except the buffalo, which is also domesticated; but oxen, sheep, and swine are reared. The population consists of the aboriginal Negritos, and of Malays, Chinese, Spaniards, &c., and the whole is estimated at about 3,400,000. The capital is Manilla.

Lycan'thropy (Greek *lykos*, a wolf, and *anthrōpos*, a man), a kind of erratic melancholy or madness in which the patient imagines himself to be a wolf and acts in conformity with his delusion. Great numbers were attacked with this disease in the Jura in 1600. They horded together, and emulated the habits of the wolf, howling, walking on hands and feet, and devouring children.

Lycao'nia, a small district in Asia Minor, situated between Galatia, Cappadocia, and Isauria, of which the capital was Iconium. It was visited by Paul and Barnabas in their earliest missionary journey, as described in Acts xiv.

Lyce'um, an academy at Athens in which Aristotle explained his philosophy. In modern times the name of *lyceum* has been given to the schools intended to prepare young men for the universities.

Lych-gate. See *Lich-gate*.

Lychnis (lik'nis), a genus of usually erect, annual, biennial, and perennial herbs, belonging to the nat. order Caryophyllaceæ, or pinks. Some of them bear beautiful flowers. The scarlet lychnis, ragged robin, rose campion, and corn-cockle are well known.

Lyc'ia, an ancient maritime province in the south of Asia Minor, bounded by Caria on the west, Pamphylia on the east, and Pisidia on the north. It was colonized by the Greeks at a very early period, and its historical inhabitants were Greeks, though with a mixture of aboriginal blood.

Lycoper'don, a genus of fungi, commonly called *puff-balls*. In a young state they are edible.

Lycoph'ron, born at Chalcis, in Eubœa, a Grecian poet and grammarian, the author of several tragedies, who lived at Alexandria, 280 B.C. Of his writings there remains only a dramatic monologue called Cassandra.

Lycopo'dium, a genus of plants of the nat. order Lycopodiaceæ (which see). Six species are found in Britain, of which the most conspicuous is the *L. clavatum* or common club-moss, the yellow powder in the spores of which burns explosively, and is used for producing theatrical lightning. *L. complanatum* is common in woods in the U.S.

Ly'copods, LYCOPODIACEÆ, the club-moss tribe; a natural order of vascular acrogens, chiefly inhabiting boggy heaths, moors, and woods. They are intermediate in their general appearance between the mosses and the ferns, and are in some respects allied to the Coniferæ. The only British genus is *Lycopodium* (which see).

The lycopods occur in all parts of the globe, but grow most luxuriantly in tropical or



Lycopodium Selago. a, Leaf; b, Sporangium in the axil of bract; c, Spores—magnified.

mild climates. In the carboniferous era they attained a very large size, rivalling trees in their height and the thickness of their stems, as in the case of the *Lepidodendron*.

Lycur'gus, the great legislator of the Lacedæmonians, was the son of Eunomus, king of Sparta. His history commences with the year 898 B.C., when he might have usurped the throne on the death of his brother, but preferring to guard the kingdom for the unborn child of the latter, he devoted himself to the study of legislation. On his nephew becoming of age, Lycurgus travelled into Crete, Egypt, and Asia, and thus prepared himself to give Sparta the laws which have rendered his name immortal. His object was to regulate the manners as well as the government, and to form a warrior nation, in which no private interest should prevail over the public good. It is said that Lycurgus persuaded the Spartans to swear that they would observe these laws till his return from another journey, and that he then departed, and they never heard of him more. One account states that he starved himself to death, but it is more probable that he retired to private life, and died naturally, as Lucian records, at the age of eighty-five.

Lydgate, JOHN, English writer, born in 1375, and died 1460. He was educated at Oxford, and became a priest, after which he travelled in France and Italy and made himself well acquainted with such writers as Dante, Boccaccio and Chaucer. He afterwards published many poems, as *The History of Troy*, *The Story of Thebes*, *The Fall of Princes*, &c. A selection of his works was published by the Percy Society in 1840.

Lyd'ia, in ancient geography, a large and fertile country of Asia Minor, divided from Persia by the river Halys (now Kizil Irmak). It attained its highest prosperity under the Mermnadæ dynasty, beginning with the half mythological Gyges (716 B.C.), and ending with Croesus (546 B.C.), who was conquered by the Persians under Cyrus. The Lydians are credited with the invention of certain musical instruments, the art of dyeing wool, also the art of smelting and working ore. Sardis was the capital.

Lydian-stone, a siliceous flinty slate, having the appearance of black velvet, found in many countries, but first brought from Lydia and used as a touch-stone.

Lye, water impregnated with alkaline salt imbibed from the ashes of wood, or any solu-

tion of an alkali used for cleaning purposes, as for types after printing, ink-rollers, &c.

Ly'ell, SIR CHARLES, BART., geologist, born at Kinnordy, Forfarshire, 1797, died in London 1875. He was educated at Oxford, where he graduated as B.A. and M.A.; began to study law, but afterwards resolved to devote his time and fortune to geological



Sir Charles Lyell.

research. For this purpose he visited the continent of Europe and the United States. His first important work was the *Principles of Geology* (1830–33), and a portion of this book afterwards formed the basis of the *Elements of Geology*. Another important work was the *Antiquity of Man* (1863), in which he summarized the evidence in favour of the theory that the race of man was much older than was currently believed. Lyell was knighted in 1848, and made a baronet in 1864. His *Life and Letters* were published in 1881.

Lyly, or LILLY, JOHN. See *Lilly*.

Lyme-grass, the popular name of certain grasses. One species, *Elymus arenarius*, is a native of Britain. They are all coarse grasses.

Lyme-Regis, a municipal borough and seaport of England, in Dorsetshire, 22 miles west of Dorchester, intersected by the Lyme. Pop. 2047.

Lym'ington, a seaport of England, in the county of Hants, at the mouth of the Boldre, 12 miles south-west of Southampton. Previous to 1885 it sent one member to parliament. Pop. 2410.

Lymph, in physiology, the fluid resulting primarily from the assimilation of food, and

also obtained from the blood and tissues, and which is contained within a system of vessels called *lymphatics* and *lacteals*. The clearest and simplest view of the lymphatic system is to consider these vessels as the media through which matters are absorbed from the alimentary canal on the one hand, and from the blood and tissues on the other. The matters so absorbed are elaborated and converted in the *lymphatic glands* into *lymph*, a fluid which presents the essential features of the more highly elaborated blood, and which is ultimately poured into the blood mainly through the *thoracic duct*. Through this system the continual loss which the blood and body suffer is made good. The lymph as it exists in the lymphatic vessels is a colourless, transparent fluid, destitute of smell. The lymphatic glands are highly important structures, for it is only after passing through them that the lymph is fully elaborated and ready to enter the blood. Their average size is that of a small almond, and they are generally arranged in groups. As distinguished from the lymphatics the lacteals are the vessels by which the chyle is absorbed from the small intestine and elaborated in the lymphatic glands of the mesentery to be afterwards poured into the thoracic duct. This duct pours its contents into a large vein at the root of the neck. Lymphatic vessels and glands are numerous throughout the body.

Lynchburg, a town, Campbell co. Virginia, U.S., on James' River, 146 miles west by south of Richmond. It contains iron and brass foundries, a large cotton factory, several flour mills, and extensive tobacco manufactories. Pop. 1890, 19,709.

Lynch-law, the practice of punishing men for crimes or offences by private unauthorized persons without a legal trial. The origin of the phrase, used chiefly in America, has been variously accounted for, but it is evidently derived from some person named Lynch, who adopted a rough and ready mode of punishing offenders.

Lyndhurst, JOHN SINGLETON COPLEY, BARON, an eminent lawyer and statesman, was born of Irish parentage at Boston, United States, 1772, and died in 1863. Intended by his father, J. S. Copley the artist, to be a painter, he studied for some time under Reynolds and Barry, then entered the University of Cambridge in 1791, took his M.A. degree in 1797, became a fellow of Trinity College, and was called to the bar at Lincoln's Inn in 1804. In 1817 he

ably defended Watson and Thistlewood for high treason, was appointed chief-justice for Chester, and in 1818 entered parliament. In 1819 he became solicitor-general in the Liverpool administration, in 1824 attorney-general, and in 1826 master of the rolls. He was raised to the peerage as Baron Lyndhurst, and became lord-chancellor in 1827, a post he retained till 1830. During the ministry of Earl Grey (1830-34) he held the position of chief baron of the exchequer. He was a formidable opponent of the reform bill. He was again chancellor in 1834, and a third time when the Conservatives returned to power in 1841. His eloquence was much appreciated by the Tory party, especially in the House of Lords, where he continued to take an interest in foreign politics down to the year 1859, when he vigorously attacked the policy of Napoleon III.

Lyndsay. See *Lindsay*.

Lynedoch (lin'dok), THOMAS GRAHAM, LORD, British general, son of Thomas Graham of Balgowan, Perthshire, was born in 1750, and died in 1843. Until 1792 he lived as a country gentleman, but when his wife died he entered the army as a volunteer, and greatly distinguished himself at the siege of Toulon. He afterwards took part with Sir John Moore in the expedition to Sweden and the retreat to Coruña; and was engaged in the Walcheren expedition. Being sent to take command of the forces besieged by the French at Cadiz, he gained the victory of Barosa in 1811. He next joined Wellington's army and shared in the Peninsular war, including the battle of Vittoria and the siege of St. Sebastian. In 1814, after the unsuccessful siege of Bergen-op-Zoom, he was created Baron Lynedoch.

Lynn, a town of the United States, Essex county, Massachusetts, on an arm of the Massachusetts Bay, about 10 miles north-east from Boston. The town has some fine public buildings, including the city-hall, music-hall, Oddfellows' hall, &c. Its chief industry is the manufacture of boots and shoes, of which upwards of 15,000,000 pairs are stated to be annually made. Pop. 1890, 55,727.

Lynn-Regis, or KING'S LYNN, a seaport town, municipal and parliamentary borough of England, county of Norfolk, on the Wash, 38 miles W.N.W. of Norwich. The principal buildings are St. Margaret's, and All Saints' churches, St. Nicholas' chapel, the guildhall, atheneum, custom-house, corn exchange, &c.

LYNX — LYONS.

The harbour is commodious, and there are two docks. Lynn sends one member to parliament. Pop. 18,454.

Lynx, the popular name of several species of feline carnivora, resembling the common cat, but with ears longer and tufted with a pencil of hair, and tail shorter. The lynxes have been long famed for their sharp sight, which character they probably owe

to their habit of prowling about at night, and their brilliant eyes. The European lynx is the *Felis lynx*, the Canadian lynx is the *F. canadensis*. In Asia lynxes are tamed for hunting.

Lyon-king-at-(or of-) arms, in Scotland, a heraldic officer who takes his title of Lyon from the armorial bearings of the Scottish kings, the lion rampant. The offi-



General View of Lyons.

cers serving under him are heralds, pursuivants, and messengers. The jurisdiction given to him empowers him to inspect the arms and ensigns-armorial of all the noblemen and gentlemen in the kingdom, to give proper arms to such as deserve them, and to fine those who use arms which are not matriculated. Called also *Lord Lyon*.

Lyonnais (lē-on-nā), an ancient province of France, of which Lyons was the capital. It now forms the departments of the Rhône, Loire, Haute Loire, and Puy-de-Dôme.

Ly'ons (French, *Lyon*; Latin, *Lugdunum*), the second city in France, capital of the department of the Rhône, 240 miles S.S.E. of Paris, and 170 miles north of the Mediterranean. The town is built partly on a peninsula between the Saône and the Rhône, and partly on the opposite banks of the rivers on either side. The rivers are

crossed by about a score of bridges, and the city is surrounded by eighteen detached forts, which form a circuit of sixteen miles. Parts of the city are old, squalid, and unhealthy, but as a whole it has a stately and imposing appearance, and is finely seen from the Fourvières, an eminence on the right bank of the Saône, crowned by the church of Notre Dame, where a magnificent view extending to the Alps may be had. Among the chief buildings are the cathedral, mostly of the 13th century; the church of St. Martin d'Ainay, with a cupola supported by ancient Roman columns and a crypt believed to be of the 9th century; the church of St. Nizier, a fine example of flamboyant Gothic; the Hôtel de Ville, Palais de Justice, &c. In the archiepiscopal palace, situated near the cathedral, 1000 Protestants were butchered

In 1572 as a sequel to St. Bartholomew. The Hôtel de Ville is considered one of the finest edifices of the kind in France. The public library has 180,000 volumes. The Palace des Arts or museum contains a picture-gallery and other collections. The chief educational establishments are a university college, a Catholic college, a lyceum, a normal school, la Martinière, a school of industrial arts, &c. Lyons carries on various industries, but its chief glory is that of being the greatest centre of the silk manufacture in the world, giving employment in the town or surrounding neighbourhood to 240,000 people. A great many of the weavers work in their own dwellings, not in factories. There is also a large trade by railway, river, and canal.—The origin of Lyons cannot be traced. When Cæsar invaded Gaul it had become a place of some importance. Towards the end of the 2d century it numbered thousands of Christians among its inhabitants. It was sacked by the Huns and Visigoths, and in the 8th century fell for a time into the hands of an army of Saracens from Spain, but recovered its prosperity under Charlemagne, on the dissolution of whose empire it became the capital of the Kingdom of Provence. In 1312, during the reign of Philip the Fair, Lyons was annexed to the crown of France. During the revolution the city suffered severely by the paralysis of its industry, and by the murderous excesses of the emissaries of the Paris Convention, whom the citizens had defied, the chief buildings being destroyed and many of the inhabitants butchered. Outbreaks among the industrial population took place in 1831, 1834, and 1849. Pop. 1891, 416,029.

Lyons, GULF OF (in French, *Golfe du Lion*), a bay of the Mediterranean, on the south-eastern coast of France. The principal ports on this gulf are Toulon, Marseilles, and Cette.

Lyons, Clinton co., Iowa, on Mississippi River, has several mills and factories and extensive nurseries. Pop. 1890, 5799.

Lyre, one of the most ancient stringed instruments of music, consisting of a body with two horn-like pieces rising from it, and a cross-piece between the horns, from which to the lower part the strings were stretched. It was used by the Egyptians, Assyrians, and Greeks. It is said to have had originally only three strings, but the number was afterwards increased to seven, then to eleven, and finally to sixteen. It was played

with the *plectrum* or lyre-stick of ivory or polished wood, also with the fingers, and was used chiefly as an accompaniment to the voice. The body of the lyre was hollow, to



Various forms of Egyptian, Assyrian, and Greek Lyres.

increase the sound. A musical instrument of similar construction is still to be met with in the hands of the shepherds of Greece and among certain tribes of Africa.

Lyre-bird (*Menūra superba*), an insessorial bird of New South Wales, somewhat smaller than a pheasant. The tail of the male is remarkable for the three sorts of feathers that compose it, which by their shape and arrangement resemble the form of an ancient Greek lyre. It has a pleasing song, and is said to be capable of imitating the voices of other birds.

Lyric Poetry, originally, poetry sung to or suited for the lyre; in modern usage, that class of poetry in which are expressed the poet's own thoughts and feelings, or the emotions attributed to another, as opposed to epic or dramatic poetry, to which action is essential.

Lys, a river which rises in France, runs through Belgium, and enters the Scheldt at Ghent; length, 100 miles.

Lysan'der, an ancient Greek general who was appointed to the command of the Spartan fleet off the coasts of Asia Minor in 407 B.C., during the Peloponnesian war. In 405 B.C. he defeated and captured the Athenian fleet off Ægospotamos, and thus put an end to the war. He was killed in a battle with the Thebans 395 B.C.

Lys'ias, an Athenian orator, born about 458 B.C. He studied philosophy and eloquence at Thurii in Magna Græcia, and was there employed in the government.

On the defeat of the Athenians in Sicily he returned to Athens in 412, but was banished by the thirty tyrants. When the city recovered its freedom he returned in 403, and gave instruction in eloquence, also writing speeches for others to deliver. He died in 378. Only about thirty of his numerous orations have been preserved.

Lysima'chia, a genus of herbs, natural order Primulaceæ. Four species occur in U. S., known by the name of loosestrife, and one (*L. longifolia*) is called Prairie money-wort.

Lysim'achus, a general in the army of Alexander the Great, was born in Macedonia 360 B.C., and at the death of the emperor and the division of the empire he became king of Thrace. During the latter years of his reign he was instigated by his wife to kill his son Agathocles. This murder caused his subjects to rebel, and in the war which followed Lysimachus was defeated and slain at the battle of Corus in B.C. 281.

Lysip'pus, a Greek sculptor who flourished in Sicyon about 330 B.C., in the time of Alexander the Great.

Ly'tham, a watering-place in Lancashire, England, agreeably situated in a sheltered position on the north shore of the estuary of the Ribble. Pop. 5617.

Lythra'ceæ, the loosestrife tribe, a natural order of polypetalous exogens, containing about thirty genera of herbs, trees, and shrubs, of various habit, often with square branches; the leaves usually are opposite or whorled, entire, and shortly petiolate; the flowers being often large and showy. Henna and tulipwood belong to the order.

Lythrum, a genus of plants, the type of the order Lythraceæ (which see). *L. salicaria*, purple loosestrife, is a tall and handsome plant.

Lyttelton, a seaport in the district of Canterbury, New Zealand, connected with Christchurch—of which it is the port—by a railway 8 miles long. There is a fairly good harbour, improved by a breakwater, &c., a graving dock, and a considerable shipping trade. Pop. 4200.

Lyttelton, GEORGE, LORD, a poet and historian, eldest son of Sir Thomas Lyttelton, baronet, was born in 1709, and died in 1773. He entered parliament in 1730, and joined the opposition led by Pitt and Pulteney. In 1756 he was raised to the peerage. He was on terms of intimacy with Pope, and the patron of Fielding

and Thomson. His Miscellanies in prose and verse had once a reputation, but are now forgotten. In his latter years he wrote his Dialogues of the Dead and a History of Henry II.—His son, THOMAS, LORD LYTTTELTON, born in 1744, died 1779. His early years were remarkable for a promise of ability which was never fulfilled, for his dissipated habits soon estranged him from his father and separated him from his wife. Such, however, was his literary reputation and political status that he was claimed at one time as the writer of the Junius Letters. It is said that from a presentiment he predicted his death three days before it occurred, and some have thought he committed suicide.

Lyttton, EDWARD GEORGE EARLE LYTTON BULWER-LYTTON, BARON, youngest son of General Bulwer of Woodalling, and Elizabeth Barbara Lyttton of Knebworth, was born in 1805, died 1873. He entered Trinity Hall, Cambridge, graduated B.A. in 1826, M.A. in 1835, and gained the chancellor's prize medal for his English poem on Sculpture. He published poetry at an early age, but first gained reputation by the novels Pelham and the Disowned (1828), Devereux (1829), and Paul Clifford (1830). These were followed up with the popular romances of Eugene Aram, the Pilgrims of the Rhine, The Last Days of Pompeii, Rienzi, and Ernest Maltravers with its sequel Alice. In connection with Macready's management at Covent Garden Bulwer-Lyttton produced his Duchess de la Vallière, which proved a failure, but this was retrieved by the instant success of the Lady of Lyons, Richelieu, and Money. When he had thus shown his quick adaptability of talent he returned to novel-writing, and published in steady succession—Night and Morning, Zanoni, The Last of the Barons, Lucretia, Harold, The Caxtons, My Novel, and What will He Do with It? In 1845 he published a poetical satire called The New Timon, in which he attacked Tennyson, who replied more vigorously than had probably been expected. He entered parliament for St. Ives in 1831, and supported the Reform Bill as a Whig; but he changed his opinions and latterly supported the Conservatives. Under Lord Derby's ministry he was colonial secretary, and in 1866 entered the House of Lords as Baron Lyttton. He was elected rector of Glasgow University in 1856. His later literary works were The Coming Race, published anonymously (1871), The Parisians (1872), and Kenelm Chill-

ingly (1873). Among his poetic works were the epic *King Arthur*; the *Lost Tales of Miletus*; *Brutus*, a drama, &c.

Lytton, THE RIGHT HON. EDWARD ROBERT BULWER-LYTTON, EARL OF, G.C.B., son of the novelist and politician, was born in 1831; educated at Harrow and Bonn; entered the diplomatic service in 1849 as attaché at Washington, and successively served in the embassies of Florence, Paris, the Hague, St. Petersburg, Constantinople, Copenhagen, and Lisbon. He was appointed Viceroy of India by the govern-

ment of Mr. Disraeli in 1876, and it was during his administration that the queen was proclaimed Empress of India. This post he resigned in 1880, being then created an earl. He early attained a certain reputation as a poet under the pen name of 'Owen Meredith;' and has published *Clymnestra* and other Poems, *Lucile*, *Tannhäuser*, or the Battle of the Bards, *Fables in Song*, and *Glenaveril*, besides prose works. He has also published the life and letters of his father. He was appointed ambassador to Paris in 1888. He died Nov. 24, 1891.

M.

M is the thirteenth letter and tenth consonant of the English alphabet. It represents a labial and nasal articulation, the compression of the lips being accompanied with the fall of the uvula so as to allow the voice to form a humming sound through the nose, which constitutes the difference between this letter and *b*.

Maas. See *Meuse*.

Maastricht. See *Maestricht*.

Mab, a mythical personage often represented as queen of the fairies.

Macad'am, JOHN LOUDON, the great improver of roads, was born at Ayr, probably in 1756, and died in 1836. Having spent his early years in the United States he returned to Great Britain and was appointed agent for victualling the navy in the western ports. In 1815 he was appointed surveyor of the Bristol roads, and thus received the opportunity to put his road-making improvements into practice. He was so successful in this that the House of Commons presented him with a sum of £2000, and his mode of road-making is still known as Macadamization. This method consists in covering the roadway or forming the road-crust with small broken stones to a considerable depth, and consolidating them by carriages working upon the road, or by rollers, so as to form a hard, firm, and smooth surface.

Maca'o, a seaport town and Portuguese settlement in China, on a peninsula at the mouth of the Canton river, about 40 miles from Hong Kong, considered the healthiest residence in South-east Asia. (See map at *Canton*.) The settlement has an area of about 21 sq. miles, and its principal export is tea. Its commerce has greatly declined

since the rise of Hong Kong and the Chinese treaty ports. It was in 1575 that the Portuguese first obtained permission to form a settlement and to trade at Macao, and in 1844 it was declared a free port. Pop. about 72,000.

Macaro'ni, MACCARONI, a preparation of wheaten flour, used as food, usually simply boiled and served up with grated cheese, or in soups, &c. Macaroni is generally made in tubular pieces resembling a long pipe-stalk by pressing it through holes in a metal plate. *Vermicelli* is a similar preparation, but is more thread-like. Macaroni is a wholesome food, made best in the neighbourhood of Naples, and considered a national dish of the Italians.—Macaroni was used as a term of contempt for a coxcomb or swaggerer about 1770–1775.

Macaronic Poems, a kind of facetious Latin poems, in which are interspersed words from other languages, with Latin inflections. They were first written (at least with the above designation) by Teofilo Folengi 1484–1544, and were introduced into England in the reign of Henry VII. Drummond of Hawthornden is credited with a macaronic poem, *Polemo-Middinia*, published in 1691. There is good reason, however, to believe that it is later than Drummond's time, and that it is the work of Dr. Pitcairne (1652–1713).

Macas'sar, a town on the island of Celebes, capital of the Dutch government of Celebes. It has an excellent harbour, and carries on a considerable trade in rice, spices, ebony, sandal-wood, &c. Pop. from 15,000 to 20,000. See *Celebes*.

Macassar, STRAITS OF, between Celebes and Borneo, about 350 miles long, and

from 110 to 140 wide, except at the north entrance, where it is contracted to 50 miles. Navigation is difficult because of the numerous shoals and small islands.

Macau'lay, THOMAS BABINGTON, LORD, historian, essayist, and politician, was born 1800 at Rothley Temple, Leicestershire,



Lord Macaulay.

and died at Kensington 1859. His father, Zachary Macaulay, who had been a West Indian merchant, was a well-known philanthropist and the son of the Rev. John Macaulay, Presbyterian minister at Inverary, while his mother was Selina Mills, the daughter of a Bristol Quaker. Their son Thomas was severely educated in the rigid Calvinism of what was known as the 'Clapham sect.' In 1818 he entered Trinity College, Cambridge, where he obtained the Chancellor's medal for a poem on Pompeii, and a second time for a poem on Evening; received a fellowship, and took his M.A. degree in 1825. Before this he began to contribute to Knight's Quarterly Magazine, in which appeared his poems of the Armada, Ivry, and the Battle of the League; and in 1825 he inaugurated his brilliant career in the Edinburgh Review by his article on Milton. He was called to the bar at Lincoln's Inn in 1826. He entered parliament in 1830 as member for Calne, and made his first speech in support of freedom for the Jews in England. He also spoke in favour of the Anti-Slavery legislation, and delivered several speeches in favour of the Reform Bill of 1832. He afterwards became member for Leeds, but resigned his seat and proceeded to Calcutta as legal member of the supreme

council of India, in which position he prepared a new penal code that was not adopted because of its liberal dealing with the native races. Returning from India he was elected a member of parliament for Edinburgh, was made secretary of war in the Melbourne ministry (1839-41); and when the Whigs returned to power in 1846 he was appointed paymaster of the forces. At the election of the same year his Edinburgh constituency refused to re-elect him, but their attitude was reversed in 1852 when he was returned (although he had not presented himself as a candidate). During his political career Macaulay had continued his literary labours. In 1842 he published his Lays of Ancient Rome; and in 1848 appeared the first two of the five volumes of his History of England, which covers the period between the accession of James II. and the death of William III. This brilliant rhetorical exposition, although touched with partisanship and with a tendency to paradox, has attained the position of an English classic. He was created a peer in 1857, and at his death he was buried in Westminster Abbey. The Life and Letters of Macaulay has been published by his nephew, Sir Geo. Otto Trevelyan (1876).

Macaw', a genus (*Macrocerus*) of beautiful birds of the parrot tribe. The macaws are magnificent birds, distinguished by having their cheeks destitute of feathers, and their tail-feathers long (hence their generic name). They are all natives of the tropical regions of South America. The largest and most splendid in regard to colour is the great scarlet or red and blue macaw (*M. Aracanga* or *macao*). The great green macaw (*M. militaris*) and the blue-and-yellow macaw (*M. arauna*) are somewhat smaller.



Red and Blue Macaw (*Macrocerus Aracanga*).

Macaw-tree, the name given to several species of trees of the genus *Acrocomia*, natives of tropical America, as *A. fusiformis*

and *A. sclerocarpa*, the fruit of which last yields an oil of a yellowish colour of the consistence of butter, with a sweetish taste and an odour of violets, used by the natives of the West Indies as an emollient in painful affections of the joints, and largely imported into Britain, where it is sometimes sold as palm-oil, to be used in the manufacture of toilet soaps.

Maça'yo. See *Maceio*.

Macbeth', **MACBEDA**, or **MACBETHAD**, son of Finnlæch, a king of Scotland who reigned from 1040 to 1057. The facts of his life, so far as they are known, are these. During the reign of Duncan he was 'mormaer' of Moray by inheritance, and by his marriage with Gruoch, grand-daughter of Kenneth IV. This Duncan, in his attempt to subdue the independent chiefs of the north, was slain by Macbeth at 'Bothgowan,' which is supposed to be near Elgin. By this means Macbeth became king, and, according to all accounts, his reign was fairly successful. In 1050 he is said to have gone on a pilgrimage to Rome. At the death of their father the sons of Duncan had taken refuge with their Uncle Siward, earl of Northumberland, and with his aid they invaded Scotland in 1054; a battle was fought at Dunsinane, but it was not until 1057 that Macbeth was finally defeated and slain at Lumphanan in Aberdeen. The legends which gradually gathered round the name of Macbeth were collected by John of Fordun and Hector Boece, and reproduced by Holinshed in his Chronicle, and there found, as is supposed, by Shakspeare, who has made such splendid use of them.

Mac'cabees, a dynasty of ruling Jewish priests of whom the first who came into prominence was Mattathias. During the persecutions of Antiochus Epiphanes he slew a Jew who came to the altar to renounce his faith, and then fled to the mountains with his five sons—Johannes, Simon, Judas, Eleazar, and Jonathan. Being joined by numerous patriotic Jews they were able to make successful resistance to the national foe and re-establish the ancient religion. When Mattathias died (166 B.C.) his sons Judas and Jonathan became successively leaders of the national movement. The last remaining member of the family was Simon, who now carried forward the national cause to a triumphant issue, reduced 'the tower' of Jerusalem, and established the power of the new state. Under his rule trade and agriculture flourished, until

(in 135 B.C.) he was treacherously murdered by Ptolemy, his own son-in-law.

Maccabees, **BOOKS OF**, treat of the Jewish history under the Maccabean princes; they are five in number, the first two of which are included in the English Apocrypha, and are accounted canonical by the Roman and Greek churches.

M'Carthy, **DENIS FLORENCE**, poet, born in Ireland about 1820, died 1882. His ballads, poems, and lyrics were published in 1850. He translated six of Calderon's dramas; wrote a volume on Shelley's Early Life in 1872, and contributed an ode to the Moore Centenary in 1879. A collected edition of his poems was published in 1884.

M'Carthy, **JUSTIN**, M.P., novelist, historian, and politician, was born at Cork in 1830; became connected with the Liverpool press in 1853; joined the staff of the Morning Star in 1860, and ultimately became its chief editor in 1864. He afterwards travelled for three years in the United States; contributed to various English and American magazines, and was connected with the Daily News 1870-85. His novels are numerous, and his historical writings include History of Our Times, 1837-80, History of the Four Georges, &c. He has represented Longford in parliament since 1879 as a Home-Ruler.—His son, **JUSTIN HUNTLEY M'CARTHY** (born 1859), is also an M.P. of the same party, and is favourably known in literature.

MacClellan, **GEORGE BRINTON**, an American general, born at Philadelphia 1826, died 1885. He was trained at the West Point Military School; served in the Mexican war; joined the Red River expedition as engineer; and in 1855 was appointed to the commission which reported on the condition of European armies, and watched the military operations during the Crimean war. At the outbreak of the civil war in the States he superseded M'Dowell after the first battle of Bull's Run; and became commander-in-chief on the 1st November, 1861. In this capacity he organized the raw levies of the North and advanced against Richmond the following spring, but was relieved from his supreme command by President Lincoln in 1862, and thenceforth led the army of the Potomac in a series of engagements which terminated in the Seven Days' Battle, when he had to retire from his lines in front of Richmond. Afterwards, when Lee advanced into Maryland, MacClellan fought the battles of South Mountain and

Antietam (September 14-17, 1862), and compelled the Confederate forces to retire. The political authorities being dissatisfied with his apparent slackness in following up this victory, MacClellan was relieved from his command and retired from the army. In 1864 he was nominated for the presidency, but was overwhelmingly defeated by Abraham Lincoln.

Macclesfield, a town of England, Cheshire, 17½ miles south by east of Manchester, on the Bollin. It is pleasantly situated, and the principal buildings are the church of St. Michael, an ancient structure, founded by Eleanor, queen of Edward I., in 1278; St. Peter's, and St. Paul's; a spacious town-hall, subscription library, theatre, &c. The staple manufacture is silk, and the cotton manufacture has also made some progress. In the vicinity are extensive coal-pits and stone and slate quarries. The town used to return two members to parliament, but was disenfranchised in 1885, and a Macclesfield division of Cheshire created. Pop. 36,009.

MacClintock, VICE-ADMIRAL SIR FRANCIS LEOPOLD, K.C.B., born at Dundalk 1819; entered the navy in 1831; became a lieutenant in 1845; and in 1848 joined the expedition sent out by the British government in search of Sir John Franklin, the Arctic explorer. In 1852 he was instrumental in rescuing MacClure and his companions. In 1857, as commander of the *Fox*, a vessel equipped by Lady Franklin, he discovered evidence of the death of Franklin. In 1884 he became admiral.

McCloskey, JOHN, Cardinal, was born in Brooklyn, N. Y., in 1810. In 1834 he was ordained priest. In 1844 he was made coadjutor of the Diocese of New York. In 1847 he was transferred to the See of Albany. In 1864 he was made Archbishop of New York. In 1875 he was appointed Cardinal-priest. The history of his life is the history of the progress of the R. C. Church in New York. He died in 1885.

MacClure, VICE-ADMIRAL SIR ROBERT JOHN LE MESURIER, C.B., born in 1807, died in 1873. He entered the navy in 1824; joined an Arctic expedition in 1836; accompanied Sir John Ross into the same region in 1848; and himself took command of an Arctic expedition in 1850. He penetrated as far north as Melville Sound, and there discovered a passage from the Atlantic to the Pacific, which he named Prince of Wales Strait. He and his companions were imprisoned for a time, but were re-

lieved by the expedition with which MacClintock was connected (see above).

McCormick, CYRUS H., inventor, was born in Walnut Grove, Va., in 1809. In 1831 he built the reaping-machine, which with his improvements has done so much for the cause of agriculture. He died 1884.

MacCosh, JAMES, D. D., LL. D., was born in Ayrshire in 1811; became a minister of the Church of Scotland first at Arbroath then at Brechin; joined the Free Church after the disruption movement; was appointed professor of logic and metaphysics in Queen's College, Belfast, 1851; was president of Princeton College, New Jersey, U.S.A., from 1868 to 1888, when he resigned. He has written various works on philosophy and psychology, and among others the *History of Scottish Philosophy* (1874); the *Development Hypothesis* (1876); the *Emotions* (1880); and *Psychology, the Cognitive Powers* (1886).

MacCulloch (M'CULLOCH), HORATIO, R.S.A., one of the most distinguished of Scottish landscape-painters, was born in Glasgow in 1806; died near Edinburgh 1867. From 1831 he was a regular contributor to the exhibitions of the Royal Scottish Academy, Edinburgh. He rarely exhibited in London, and his works are little known south of the Tweed. His paintings are nearly all of Scotch scenery. Among the most celebrated are the *Cuchulin Mountains (Skye)*, *A Dream of the Highlands*, *Highland Loch*, *Views in Cadzow Forest*, *Loch-an-Eilan*, *Mist on the Mountains*, *Loch Achray*, *Loch Katrine*, and *Loch Lomond*.

MacCulloch, JOHN, British mineralogist, born in 1773, died in 1835. Educated at Edinburgh for the medical profession, he became assistant surgeon in the army, and ultimately practised privately at Blackheath. He undertook a government mineralogical and geological survey of Scotland in 1826, a task which was completed in 1832. As the result of his labour he published *A Description of the Western Islands of Scotland*; *A Geological Classification of Rocks*, &c.

MacCulloch (M'CULLOCH), JOHN RAMSAY, a political economist and statistician, born in Wigtonshire 1789, died in London 1864. He was for some time editor of the *Scotsman* newspaper and contributed largely to the *Edinburgh Review*. In 1828 he was appointed professor of political economy in London University, became comptroller of the stationery office in 1838, and retired on a pension of £200 a year. Among his

numerous works are *The Principles of Political Economy* (1825); *Historical Sketch of the Bank of England* (1831); *Dictionary of Commerce* (1832); *Geographical Dictionary* (1841); *A Treatise on the Principles and Practical Influence of Taxation and the Funding System* (1845); *The Literature of Political Economy* (1845), and the works of Ricardo with a memoir.

Macdonald, FLORA, born on South Uist, one of the Hebrides, in 1720, died 1790. She became celebrated in 1746 for the part she took in assisting Prince Edward Charles to escape the government pursuit, when she conveyed him from South Uist to Skye, disguised and in an open boat. For this cause she was imprisoned for several months in London and then released. She married, settled in America, but afterwards returned to, and died in Skye.

MacDonald, GEORGE, LL.D., novelist and poet, was born at Huntly in 1824; educated at King's College, Aberdeen; became an Independent minister, but soon retired from this position and adopted literature as a profession. Among his numerous novels are *David Elginbrod*, *Alec Forbes*, *Annals of a Quiet Neighbourhood*, *Robert Falconer*, *Malcolm*, *The Marquis of Lossie*, *Castle Warlock*, &c. He has also published a good deal of poetry, stories for the young, *Unspoken Sermons*, &c.

Macdonald, SIR JOHN ALEXANDER, K.C.B., D.C.L., Canadian statesman, was born in Scotland in 1815. Being taken to Canada, he was educated at Kingston; admitted to the bar in 1835; entered parliament for Kingston in 1844; and became successively a member of the executive council, receiver-general, commissioner of crown lands, and attorney-general. He became premier in 1869, a position which he held until 1873 when he resigned over the Pacific Railway Charges, but resumed the office again in 1878, and retained it until his death, June 6, 1891. He was an active promoter of the Canadian Pacific Railway and the Canadian confederation movement, and was a recognized leader of conservative party.

Mace, a weapon of war in use in Europe as late as the 16th century. It consisted of a staff about 5 feet long, with a heavy metal head, which assumed a variety of forms, but was frequently in the form of a spiked ball. Another kind of mace is a sort of heavy ornamental staff used as an emblem of authority in universities, courts of law, parliament, &c.

Mace, a spice, the dried aril or covering of the seed of the nutmeg (*Myristica fragrans*), this covering being a fleshy net-like envelope somewhat resembling the husk of a filbert. When fresh it is of a beautiful crimson hue. It is extremely fragrant and aromatic, and is chiefly used in cooking or in pickles.

Macedo'nia, in ancient geography, a territory lying to the north of Greece, which first became powerful under its king Philip, the father of Alexander the Great, and conqueror of Greece. Alexander the Great added immensely to the empire of Macedonia, and made, what had only been a petty province, mistress of half the world. After his death the empire was divided; dominion was lost over Greece; and the result of the battles of Cynoscephalæ (197 B.C.) and Pydna (168 B.C.) was to reduce the ancient kingdom to a Roman province. Macedonia now forms a part of Turkey in Europe, and is inhabited by Wallachians, Turks, Greeks, and Albanians.

Maceio (mă-să'i-o), Brazilian seaport, capital of prov. Alagoas, on the Atlantic, lat. 9° 39' S. Chief exports: cotton, rum, and sugar. Pop. 12,000.

Macerata (mă-che-ră'tă), a town in Italy, capital of the province of the same name, on a lofty eminence midway between the Apennines and the sea, 21 miles south of Ancona. The principal buildings are the cathedral, provincial palace, and theatre, all situated in a large public square, various churches and convents, a college, museum, &c. Pop. 20,263.—The province, bounded north by Ancona, west by Umbria, south by Ascoli, and east by the Adriatic, has an area of 1056 square miles, produces much corn, fruit, and hemp, and rears great numbers of sheep and cattle. Pop. 250,368.

Macfar'ren, SIR GEORGE ALEXANDER, musical composer, born in London 1813, died 1887. He was educated at the Royal Academy of Music; became a member of the Board of the Academy, and ultimately chairman and principal; was elected professor of music, Cambridge University (1875); and was knighted by the queen in 1883. His chief operas are *The Devil's Opera* (1838), *Don Quixote* (1846), *Robin Hood* (1860). He also essayed the cantata in *Lenore* (1852), and *The Lady of the Lake* (1870); while his oratorios are *St. John the Baptist* (1873), *The Resurrection* (1876), *Joseph* (1877), and *King David* (1883). He also wrote several musical treatises.

M'Gee (-gē'), THOMAS D' ARCY, born at Carlingford, Ireland, 1825; became prominent in the Young Ireland party, and had to make his escape to the United States, where he soon made a name as a journalist. His views then underwent a change; he became an ardent royalist; went to Canada, and entered parliament in 1857. In 1864 he became president of the executive council, and up till near his death took a prominent part in the measures of the day. Obnoxious to the Fenians, he was assassinated by a member of that body in 1868.

Macgil (-gil'), JAMES, born in Glasgow, Scotland, 1744, died at Montreal 1813. He emigrated to Canada, and ultimately became one of the chief merchants in the city. He left property valued at £30,000 (now enormously increased in value), and £10,000 cash to found the university in Quebec which bears his name.

Macgil'licuddy Reeks, a picturesque mountain-range of Ireland, in the county of Kerry, extending for $13\frac{1}{2}$ miles from the lakes of Killarney on the east to Lough Carra on the west. It is the loftiest mountain-range in Ireland; Carrantual, the highest peak, rises 3404 feet above sea-level.

Macgil'livray, WILLIAM, LL.D., born in the island of Harris, Scotland, 1796; died at Aberdeen in 1852. He was for a time assistant professor of natural history in Edinburgh University, and ultimately became professor of natural history in Marischal College, Aberdeen, in 1841. He was the author of a *Manual of Geology*, a *History of British Quadrupeds*, a *History of the Molluscan Animals of the Counties of Aberdeen, Kincardine, and Banff*; and of an admirable *History of British Birds* (5 vols. 1837-52).

Machiavelli (māk-yā-vel'lē), NICCOLO, a distinguished Italian statesman and historian, born at Florence in 1469; died in 1527. He became prominent in public affairs in 1498, when he was appointed secretary to the Ten at Florence. For more than fourteen years he guided the destinies of the Florentine Republic, undertook embassies, concluded treaties, and jealously conserved the rights and liberties of his native city. When the Medici returned to power in 1512 by aid of Pope Julius II., Machiavelli was deprived of his office, and imprisoned for his supposed complicity in a plot to overturn the new authority, but being released after a time he retired to his country house of San Casciano. Here he devoted himself to lite-

rary labour, the chief results of which are found in his *History of Florence*, embracing the period between 1215 and 1492; *Discourses upon the ten first books of Livy*; *The Prince* (*Il Principe*), by which he is best known; a military treatise entitled *Dell' Arte della Guerra*; and the *Comedies of La Mandragola and La Clizia*. The name of Machiavelli was for long synonymous with all that is tortuous and treacherous in state affairs. The more recent, as also the more generous estimate of this Italian statesman, is to regard his *Prince* as a first honest but imperfect attempt to construct a state out of the decayed mediæval institutions still lingering in Italy, and that its defects on the ethical side are due to the corrupt times in which he lived, the conditions of political dissimulation under which his experience was gained, and the overmastering desire he had to see his country unified and made great.

Machine Gun, a name given to any of those pieces of ordnance that are loaded and fired mechanically, and can deliver a number of projectiles simultaneously or in rapid succession, having usually a number of separate barrels. The first of these to come into prominence in warfare was the French *mitrailleuse*, or *mitrailleur*, which was employed in the Franco-German war. (See *Mitrailleuse*.) The Gatling gun first appeared in the United States, and was speedily adopted by Britain and other powers, with modifications. Other guns of this kind are the Hotchkiss, the Nordenfeldt, and the Gardner gun. Such guns, while having their own use in warfare by land, are regarded as being of special value in marine warfare, and are intended mainly for use against torpedo-boats. The Nordenfeldt, the Gatling, and the Gardner are all in use in the British navy. The Gardner gun may be mounted in various ways—on a gun-carriage, or on a tripod stand the legs of which can be screwed down to a ship's deck. As to absolute rapidity of fire the Nordenfeldt has slightly the superiority; yet the two-barrel Gardner can fire 236 rounds, the five-barrel Gardner 330 rounds in half a minute, while as regards reliability for continuous work and ease and rapidity of fire the Gardner gun has manifested a marked superiority over the Nordenfeldt. The latter is fired by a handle with a reciprocating motion, while the Gardner is fired by a handle with a rotary motion, which is the same whatever the elevation or depression of the

gun. The Hotchkiss gun fires heavier projectiles (hollow percussion shells) than the other machine guns, the fire being continuous. It may be described as consisting of a gun-metal frame in which five Whitworth steel barrels revolve with intermittent motion, having a single firing action and cast-iron breech. The barrels become stationary at the moment of firing, loading, and extracting the empty cartridges. A more recent machine gun is the Maxim, which, after the first shot is fired by hand power, continues to fire shot after shot by means of the power derived from the explosion of each successive cartridge.

Machine Tools, a name given to various machines constructed to perform operations that otherwise would be done by hand. They include planing machines, drilling machines, punching machines, boring machines, steam hammers, &c.; and some of them are marvels of accuracy and ingenuity.

Mackay (ma-kī'), CHARLES, LL.D., poet and miscellaneous writer, born at Perth in 1812, and educated in London and Belgium. He was employed on the *Morning Chronicle*; became editor of the *Glasgow Argus*; afterwards he joined the *Illustrated London News*. He represented the Times in New York during the civil war.

Mackay, JOHN W., capitalist, was born in Dublin, Ireland, in 1831. After a miner's life in California, in 1860 he went to Nevada. In 1872 he was one of the discoverers of the Bonanza mines, of which he owned two-fifths. Their production has been enormous. In 1884, in partnership with James Gordon Bennett, he laid two cables across the Atlantic.

McKeesport, Allegheny co., Pa., an extensive coal and iron mining borough, on the Monongahela river; has iron and steel manufactories. Pop. 1890, 20,741.

Macken'zie, SIR ALEXANDER, Canadian explorer, born at Inverness, Scotland, 1755; died 1820. In the employment of the Northwest Fur Company he explored the great river named after him from the western end of Great Slave Lake to the Arctic Ocean (1789). He made another expedition to the western coast (1792), and was the first white man to cross the Rocky Mountains and reach the Pacific coast. He returned to Britain in 1801, and was knighted.

Mackenzie, ALEXANDER, Canadian statesman, born in Logierait, Perthshire, Scotland, 1822. Originally a stone-mason, he emigrated to Kingston, Canada, in 1842, and

began business as a builder and contractor. In 1852 he was editor of a liberal newspaper, and he entered parliament in 1861, becoming leader of the liberal party in 1873. On the resignation of Sir John Macdonald that same year he became premier, and retained office with much success till 1878. He has more than once declined the honour of knighthood. He died April 17, 1892.

Mackenzie, ALEX. CAMPBELL, composer, born at Edinburgh 1847; received his musical education partly in Germany. He became principal of the Royal Academy of Music in 1888. He is the author of the oratorio *The Rose of Sharon* (1884), the operas *Colomba* (1884), and *The Troubadour* (1886), the Cantata of the Story of Sayid (1886), *The Dream of Jubal* (1889), &c.

Mackenzie, SIR GEORGE, Scottish lawyer, born 1636, died 1691. He became king's advocate in 1677, in which capacity his persistent severity towards the covenanters acquired for him the title of 'the Bloody Mackenzie.' The revolution terminated his political career. Besides his *Vindication of the Government of Charles II.*, he wrote *Institutions of the Law of Scotland* (1684), *Laws and Customs in Matters Criminal* (1674), and in his *Memoirs* he gives an interesting account of Scotland before the revolution. Sir George Mackenzie was founder of the Advocates' Library in Edinburgh (1682).

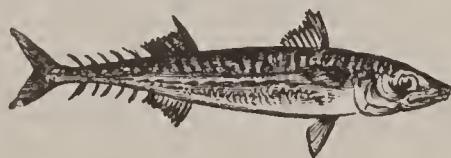
Mackenzie, HENRY, Scottish writer, born 1745, died 1831. After being educated at the University of Edinburgh he became an attorney of the Scottish Court of Exchequer. In 1771 he published the work by which he is best known—*The Man of Feeling*, in 1773 *The Man of the World*, and in 1777 *Julia de Roubigné*. These novels, though greatly commended in their day, have long passed out of favour. In 1779–80 he edited *The Mirror*, and from 1785 to 1787 he conducted *The Lounger*, both being the kind of periodical made familiar by Addison's *Spectator*. Besides several dramatic pieces he wrote the *Lives of Dr. Blacklock, John Home, Lord Abercromby, and William Tytler*. In 1804 he was appointed comptroller of the taxes for Scotland.

Mackenzie, SIR MORELL, M.D., born at Leytonstone, Essex, 1837; educated at London Medical College, Paris, and Vienna; obtained the Jackson prize for diseases of the larynx; became physician to the London Hospital, and lecturer on diseases of the throat. In 1887–88 he was associated with

the specialists of Berlin and Vienna in the treatment of the larynx disease of the Emperor Frederick (at first, while he was Crown Prince) of Germany. He is the author of a treatise on Diseases of the Throat and Nose and several other works. Died Feb. 3, 1892.

Mackenzie River, a large river in the North-west Territories of Canada, which flows out of Great Slave Lake, first west, then north, finally north-west; and after a course of about 1200 miles falls into the Arctic Ocean by numerous mouths. Its principal affluents, including the feeders of Great Slave Lake, are the Athabasca, the Peace, the Liard, and the Peel, and it is navigable throughout its course. It was discovered by Alexander Mackenzie in 1789.

Mackerel (*Scomber scombrus*), one of the spiny finned fishes (Acanthopteri), a well-known and excellent table fish, which inhabits almost the whole of the European



Mackerel (*Scomber scombrus*).

seas. Mackerel, like herring, are caught only when they approach the shore to spawn, nets being chiefly used. The N. American mackerel (*S. vernālis*) is also caught in great quantities on the Atlantic coasts.

Mack'intosh, SIR JAMES, Scottish historian and philosophical writer, born 1765, died 1832. He was educated at Aberdeen and Edinburgh; studied medicine and took the M.D. degree in 1787; published his *Vindiciæ Gallicæ* in answer to Burke's *Reflections on the French Revolution*; quitted the medical profession and was called to the English bar in 1795. By reason of his brilliant lectures on the Law of Nature and Nations, and his defence of Peltier, who was prosecuted for a libel on Napoleon Bonaparte, he acquired fame at the bar, received the honour of knighthood, and in 1804 was appointed recorder of Bombay. After an honourable career in India he returned to England; entered parliament for Nairn, and afterwards for Naresborough; became professor of law at Haileybury College (1818-24), a member of privy council, and in 1830 commissioner of Indian affairs.

McKinley, WILLIAM, JR., Congressman and Governor, was born at Niles, Ohio, Feb. 26, 1844. He served in the Union army throughout the civil war. He has

been member of the House seven sessions and renowned as exponent of protection, the Tariff act of 1890 being known as the McKinley bill. In 1891 he was elected Governor of Ohio, the leading issues being protection and silver coinage.

Macle, in mineralogy, a term applied to twin-crystals, which are united in various ways. Macle is also used as a name for chialstolite or cross-stone.

Macleod (ma-kloud'), NORMAN, a minister of the Church of Scotland, born at Campbeltown, Argyleshire, 1812; died at Glasgow 1872. Educated at Glasgow, Edinburgh, and in Germany, he became minister first of Loudon and then of Dalkeith, when he published his first work, entitled *The Earnest Student*, and became editor of the *Edinburgh Christian Magazine*. In 1851 he became minister of the Barony parish, Glasgow, where he henceforth laboured with increasing popularity. In 1854 he was appointed one of the queen's chaplains for Scotland and dean of the order of the Thistle, and he received the honorary degree of D.D. in 1858. Besides his untiring interest and labours in connection with the general work of the church, and in various philanthropic movements, he became editor of *Good Words* in 1860, in which he published his stories of *The Old Lieutenant and his Son*, *The Starling*, *Wee Davie*, *A Highland Parish*, &c. In 1867 he visited India, and the results of this journey appeared in his *Peeps at the Far East*. In 1869 he was elected moderator of the General Assembly of the Church of Scotland.

Maclise, DANIEL, R.A., a celebrated painter of Scottish descent, born at Cork 1811, died 1870. He became a student at the Royal Academy in 1828, and began to exhibit in 1829, but it was not until the year 1833 that he established his reputation with his picture of *Snap Apple Night*. Three years after he was elected an associate, and in 1840 he became a full member of the Royal Academy. Maclise was commissioned to paint for the new Houses of Parliament, and produced *The Spirit of Chivalry*, *The Spirit of Religion*, and the two great paintings of *The Meeting of Wellington and Blücher after Waterloo* and *The Death of Nelson* (1858-64). Among his best-known pictures are *Merry Christmas in the Baron's Hall*, *The Ordeal of Touch*, *The Marriage of Strongbow and Eva*, the *Play Scene in Hamlet*, the *Banquet Scene in Macbeth*, &c. His sketches, book illus-

trations, humorous drawings, and outline portraits were very numerous. He declined the presidency of the Academy in 1866. The works of Maclise show great fertility of invention, skill in composition, and excellence in drawing, but are not distinguished for colour.

Macmahon (mak-mā-ōn), MARIE EDMÉ PATRICK MAURICE DE, Duke of Magenta and Marshal of France, born in 1808; educated at the military college of St. Cyr; served with distinction in Algeria; became brigadier-general in 1848; received command of a division during the Crimean war, and assisted in storming the Malakoff; took part in the campaign of 1859 against Austria, and won the battle of Magenta by his prompt handling of the left wing; and after the war became governor-general of Algeria. At the outbreak of war between France and Germany (1870) Macmahon was placed in command of the 1st Army Corps, which was defeated at Weissenburg, Wörth, and finally fell back upon Châlons. Here he rallied his forces, and proceeded north-eastward to relieve Bazaine, who was besieged in Metz, but he was pursued by the Germans, shut up by their encircling armies in the town of Sedan, and wounded in the battle before the final surrender. After the armistice with Germany he was employed by the Versailles government in putting down the commune, and in 1873 he was elected president of the republic, a position which he occupied until 1879.

Mâcon (mä-kon), a town in France, capital of the department Saône-et-Loire, on the right bank of the Saône, here crossed by an old bridge of twelve arches, in a fertile district, 33 miles south of Châlons. Pop. 16,570.

Ma'con, a city of the United States, in Georgia, on the Ocmulgee, the seat of a Baptist university and a Wesleyan female college. Pop. 1890, 22,746.

Macpherson, JAMES, Scottish author, was born in 1738, and died in 1796. He studied at Aberdeen and Edinburgh; became a school teacher, and afterwards a tutor; and in 1760 published *Fragments of Ancient Poetry*, translated from the Gaelic or Erse Language. The success of this venture enabled Macpherson to issue the so-called poems of Ossian in the form of *Fingal*, an ancient epic poem in six books (1762, 4to), and *Temora* and other Poems (1763, 4to). The genuineness of these poetical writings was severely questioned (see *Ossian*), but the 'editor' maintained his

position without submitting the necessary proofs. Macpherson was afterwards agent to the Nabob of Arcot; had a seat in the House of Commons from 1780 to 1790, and was interred in Westminster Abbey. He was the author of a prose translation of Homer's *Iliad*, and of some other works.

Macready (mak-rē'di), WILLIAM CHARLES, English tragedian, born in London 1793, died at Cheltenham 1873. His father, the lessee and manager of several provincial theatres, sent him to Rugby and Oxford to be educated, but his circumstances became embarrassed, and the youth had to join his father's company at Birmingham in 1810. Afterwards he played in the provinces with considerable success, and appeared at Covent Garden in 1816. In 1826 he made his first visit to America, and in 1828 played in Paris, with great success in both countries. He undertook the management of Covent Garden in 1837, and Drury Lane in 1842, but although he did much to reform the stage and cultivate the public taste for Shakesperian drama in both theatres (he himself taking the leading parts in Shakspeare's plays), his pecuniary losses required him to retire from managership. He revisited the United States in 1849; returned to England; gave a series of farewell performances, and finally retired from the stage in 1851. His *Reminiscences* appeared in 1875.

M'Crie (ma-krē'), THOMAS, Scottish writer and clergyman, born in 1772, died in 1835. He studied in Edinburgh University; was licensed as a preacher by the Antiburghers; and in 1795 became minister to a congregation in Edinburgh. He contributed a series of papers on the Reformation (1802-6) to the *Christian Magazine*, and in 1811 published his well-known *Life of Knox*. This was followed in 1819 by the *Life of Andrew Melville*. It is upon these two works that his fame chiefly rests, but he also wrote *The History of the Reformation in Italy* (1827) and the *History of the Reformation in Spain* (1829), besides a volume of *Sermons*, &c.

Macro'bious, AMBROSIIUS AURELIUS THEODOSIUS, a Latin author in the reigns of the Emperors Honorius and Theodosius (end of 4th and beginning of 5th century A.D.). He was the author of a work entitled *Saturnalia*, valuable for the light it throws upon the manners and customs of antiquity.

Macrocy'stis, a genus of marine plants, belonging to the nat. order Algæ. The

M. pyrifera exceeds all other vegetable productions in the length of its fronds, some of which have been estimated on reasonable grounds to attain a length of 700 feet. It is found in the southern temperate zone, and in the Pacific as far north as the arctic regions.

Macroom', or **MACROMP'**, a town in Ireland, county Cork. Pop. 3099.

Mac'ropiper, a genus of plants. See *Ara-ara*.

Mac'ropus (Gr. *makros*, long, *pous*, a foot), the generic name of the kangaroos, applied to them in allusion to their elongated hind feet. See *Kangaroo* and *Macropodalia*.

Macru'ra (Gr. *makros*, long, *oura*, a tail), a family of stalk-eyed decapod crustaceans, including the lobster, prawn, shrimp.

Mactra, a genus of lamellibranchiate molluscs. They live in the sand, and are universally diffused. The genus includes many rare and beautiful species.

Madagascar, a large island in the Indian Ocean, 230 miles distant from the east coast of Africa, from which it is separated by Mozambique Channel; length, 975 miles; average breadth, 250 miles; area, about 228,500 square miles (or nearly double the United Kingdom); population, about 3,500,000. Madagascar may be described as an elevated region, with an average height of 3000 to 5000 feet, overlooked by mountains rising in some cases to nearly 9000 feet. The coast exhibits a number of indentations, mostly small, but few good harbours, being in great part rock, though in some places low and sandy. On some parts of the coast are numerous lagoons. The rivers are numerous, yet few of them offer even to a moderate extent the advantages of internal navigation. The climate is oppressively hot on the coast, but temperate on the highlands of the interior. The island is only unhealthy for Europeans in the neighbourhood of lagoons or marshes. The rainy season continues from December to April. The most striking feature in the vegetation is a belt of dense forest, with an average breadth of 15 to 20 miles, passing round the whole island. It is found at all levels from 6000 feet to the water's edge, and the trees include palms, ebony, mahogany, fig, coconut, and the ravalala or traveller's tree (*Urania speciosa*), which when pierced yields a refreshing juice. The vegetable products grown for food include rice, manioc or cassava, sweet-potatoes, ground-nuts, and

yams. Ginger, pepper, and indigo grow wild in the woods; cotton, sugar-cane, coffee, tobacco, and hemp are cultivated. India-rubber, gum-copal, and dye-woods are exported. Humped cattle are found in immense herds, and form a large part of the wealth of the inhabitants, as also sheep, goats, swine, and horses. The most characteristic of the mammals are the lemurs. The birds are numerous; snakes are rare; crocodiles, lizards, chameleons abound. The inhabitants, called Malagasy, belong to the Malayo-Polynesian stock and speak a Malayan language. They appear to form a single race, though they are divided into numerous tribes, each having a distinctive name and customs. The Hovas are the ruling tribe, they having extended their sway over nearly the whole island, while the other chief tribes are the Betsimisaraka, the Betsileo, and the Sakalava. In the coast districts the houses of the better class are built of framed timber with lofty roofs; the dwellings of the lower classes are constructed of bamboo or rushes, or even of clay. The Malagasy show much aptitude as silversmiths, gunsmiths, carpenters, and with rude looms make handsome cloths. The religion of the great bulk of the people is a kind of fetishism or worship of charms. Many of their superstitious customs have been abolished and Christianity adopted, chiefly by the Hovas, but polygamy and infanticide are still practised. The government is an absolute monarchy. The standing army consists of 20,000 men, and during the recent war with France 50,000 were mobilized. Imports and exports are valued at £800,000 annually. The capital is Antananarivo, in the elevated central region, with a population estimated at 100,000; the towns next in importance are Mojanga, a port on the west (pop. 14,000); and Tamatave, a port on the east (pop. 10,000).—Madagascar was known to Marco Polo at the end of the 13th century, and in 1506 was visited by the Portuguese, who gave it the name of St. Lorenzo. Towards the end of the 17th and during the most of the 18th century the French established themselves in the island, but they were only able after a hard struggle to retain the islands of Ste. Marie on the east coast and Nossi-bé on the north-west. In the year 1810 Radama I. became king of the Hovas, and with his approval Christian missionaries began to teach in the capital in 1820, many converts were made, the Bible was translated into the Malagasy tongue,

the language was first reduced to a systematic written form, and printing was introduced. In 1828 he was succeeded by his chief wife, Ranavalona, a woman of cruel disposition, who persecuted the Christians and closed the island to Europeans. She was succeeded in 1861 by her son, Radama II., who reopened it to the missionaries and emancipated the African slaves. He also granted extensive territories and privileges to France, an act which offended his chiefs and led to his assassination in 1863. His wife occupied the throne five years, and on Ranavalona II. becoming queen in 1868, the French brought forward their claims on the Malagasy territory, which, being refused, led to war, which resulted in a treaty (1885) by which the French received Diego Suarez Bay for a naval station, an indemnity of £800,000, and the control of foreign relationships. By the Anglo-French agreement of Aug. 5, 1890, the protectorate of France over Madagascar was recognized by Great Britain. In domestic legislation the native government retains independence.

Madden, SIR FREDERICK, born at Portsmouth in 1801, died in London 1873. He early gave himself up to antiquarian pursuits, in 1828 he was appointed assistant keeper of MSS. in the British Museum, and in 1837 head keeper. He was knighted by William IV. He edited a large number of early English works and MSS.

Madder, a dye plant, *Rubia tinctorum*, nat. order Rubiaceæ. It is a climbing perennial, with whorls of dark green leaves, and small yellowish cross-shaped flowers. The prepared root is used as a red dye-stuff. It yields colours of the greatest permanence, and is employed for dyeing both linen and cotton. Two kinds of it are fixed upon cotton; one is simply called *madder-red*, and the other, which possesses a much higher degree of lustre and fixity, is called *Turkey* or *Adrianople red*, because it was for a long time obtained entirely from the Levant, where it was called *alizara*. The colouring principle

of madder is termed *alizarine*, and as this can now be obtained artificially from coal-tar, the use of madder in dyeing is almost entirely superseded by that of artificial alizarine (which see).

Madeira (má-dā'i-râ), a Portuguese island in the North Atlantic, 360 miles from the coast of Africa, 530 miles from Lisbon, 1215 from Plymouth; length, 30 miles; breadth, 13 miles; area, about 313 square miles. The island is traversed by a central mountain-ridge, the highest point of which reaches 6000 feet; from this great spurs descend to the coast forming lofty precipices; and in the bays formed between these volcanic cliffs are situated the villages of Madeira. Adjacent to Madeira is Porto Santo, a small island, and the Desertas, which, with Madeira itself, compose the group of the Madeiras. The staple products of Madeira are wine and sugar. The mean annual temperature is 65°, the two hottest months being August and September, and the three coldest January, February, and March. The climate is equable and the island is considered an excellent sanatorium for chest diseases. The capital and chief centre of trade is Funchal. The Madeiras were known to the Romans, and were rediscovered and colonized by the Portuguese in 1431. Population 135,165.

Madeira, a large navigable river of South America, a tributary of the Amazon, about 800 miles long, formed by the united streams Beni, Mamore, and Guapore on the frontiers of Brazil and Bolivia. East of the Bolivian frontier navigation is interrupted by cataracts, which it is proposed to avoid by a railway.

Madeley, a town of England in Shropshire, on the Severn, with coal and iron mines. Pop. 9212.

Ma'dia Oil, the oil from the seeds of *Madia sativa*, a composite plant allied to the sunflower, a native of Chili, but cultivated in Algeria, Germany, &c.

Mad'ison, a city, United States, capital of Wisconsin, 75 miles west of Milwaukee, situated upon an isthmus between lakes Mendota and Monona, and founded 1836. It contains the state-house, the state university dating from 1851, and has a lunatic asylum, &c. It is a great railway centre, has important manufactures, a large trade, and a population, 1890, of 13,426.

Madison, a city, United States, Indiana, on the right bank of the Ohio, 80 miles s.s.e. Indianapolis. Pop. 1890, 8937.



Madder Plant (*Rubia tinctorum*).

Madison, JAMES, fourth president of the United States, 1809–17, born in Virginia 1751, died 1836. He was educated at Princeton; elected to the Virginia Convention in 1776; became a member of the council of state; took his seat in the Continental Congress in 1780, and was there made chairman of the committee of foreign affairs. Under the administration of Jefferson he became secretary of state, and in 1808 he was elected president. During his term of office war was declared with Great Britain, which Madison prosecuted for three years with alternate defeat and success, until the decisive battle of New Orleans was fought, and peace signed in 1814. Madison retired into private life in 1817.

Madness. See *Insanity*.

Madoc, according to a Welsh tradition, son of Owen Gwynned, a Welsh prince, who, in 1170 put to sea with ten ships, and discovered land in the west, supposed to be America. He made a second voyage, but finally was lost to the knowledge of his countrymen. Southey has made Madoc the subject of a poem.

Madon'na, an Italian term of address equivalent to *Madam*. It is given specifically to the Virgin Mary, like Our Lady in English, and hence pictures representing the Virgin are generally called *madonnas*.

Mad'oqua, a very tiny antelope of Abyssinia (*Antilope saltiāna* or *Neotragus saltiāna*), about as large as a good-sized hare, and with very slender legs.

Madras', a maritime city of British India, capital of the presidency of the same name, on the Coromandel coast. It is ill-situated for commerce, standing on an open surf-broken shore with no proper harbour, though an area has recently been inclosed by piers so as to shelter a certain amount of shipping. Still it carries on an extensive commerce, being the terminus of railways from Bombay and the south, while it is also the headquarters of all the presidency departments. The town is disappointing in appearance, the site being flat and there being no handsome streets though there are some good buildings. Altogether the municipality covers an area of 27 sq. miles, the native and business part being called the Black Town. The chief objects of interest are the citadel of Fort St. George, built in 1639, the cathedral of St. George, Scotch church, government house, senate house, revenue buildings, college, &c. There are no manufactures to speak of, but the export

and import trade amounts to £10,000,000 annually. Madras was founded in 1639 by the English, and soon became their chief settlement on the coast. Pop. 1891, 449,950.

Madras, PRESIDENCY OF, includes with its dependencies and the state of Mysore the entire south of the peninsula of India. Its extreme length is 950 miles, breadth 450 miles; area, 149,092 square miles. It comprises 22 British districts, 3 agencies under special administration, and 5 native states, viz.:—Travancore, Cochin, Pudukota, Banganapalli, and Sandúr. It is surrounded on every side except the north by the sea, on which side it is bounded by Orissa, the Central Provinces, the territory of Hyderabad and Mysore. The three chief rivers, Godavari, Krishna, and Kaveri, rise in the Western Gháts and enter the Bay of Bengal. The climate is varied; in the Nilgiri Hills it is temperate, on the Malabar coast the monsoon brings an excessive rainfall, while in the central table-land the rainfall is low, and the heat almost unendurable. The soil is sandy along the coast, but there are many fertile districts; while iron, copper, lead, and coal are found in considerable quantities. There are extensive forests in the presidency, yielding teak, ebony, and other valuable timber trees. The principal vegetable products are rice, wheat, barley, maize, and other grains; sugar-cane, areca, yam, plantain, tamarind, jack-fruit, mango, melons, cocoa-nuts, ginger, turmeric, pepper, tobacco, oil seeds, coffee, and cotton. The wild animals met with are the elephant, tiger, chetah, jackal, wild hog, &c. The Madras administrative authority is vested in a governor, with a council of three members appointed by the queen, and of whom one is the commander-in-chief. For legislative purposes the council is increased by nominations of the governor. In each of the 22 districts there is a collector and a sessions judge. The chief educational institution is the Madras University, an examining body granting degrees in arts, law, medicine, and engineering. The imports amount to about £9,000,000, and the exports to £13,000,000 annually. The pop. is 30,868,504, and the native protected states have in addition a pop. of 3,303,563. The chief languages spoken are the Dravidian, namely, Tamil, Telugu (which are spoken by the great majority of the inhabitants), Canarese, and Malayalam, while Hindustani is the language spoken by the Mohammedans.

MADREPORE — MADRID.

Mad'repore, a coral-building polyp of the genus *Madrepōra*, the type of the family Madreporidæ, forming coral of stony hardness and of a spreading or branching form, hence called *tree-coral*. Madrepore coral is of a white colour wrinkled on the surface and full of little cavities, in each of which an individual polyp was lodged. These polyps raise up walls and reefs of coral

rocks with astonishing rapidity in tropical climates. The term is often applied also to other branching corals.

Madrid (mă-drid'), the capital of Spain, in New Castile, in the province of Madrid, on the Manzanares, near the centre of the Iberian Peninsula. Situated upon a high plateau, 2450 feet above the sea, wind-swept from the snowy Guadarrama, with



Puerta del Sol in Madrid.

unhealthy extremes of temperature, the city has no advantages except the fanciful geographical merit of being the centre of Spain. The principal streets are broad, long, and airy; but the squares are generally irregularly built and deficient in decorative monuments. The royal palace, a combination of Ionic and Doric architecture, is one of the most magnificent in the world, being 470 feet each way, and 100 feet high. It contains a small but splendid Corinthian chapel, a library of nearly 100,000 volumes, and a fine collection of ancient armour and coins. Madrid has no cathedral, being only a suffragan bishopric of Toledo, and the churches are few and uninteresting. The bull-fights take place in the Plaza de Toros (bull-ring), a building which is about 1100 feet in cir-

cumference, and capable of containing 12,000 spectators. The Prado, nearly 2 miles long, a boulevard on the east of the city, forms the popular promenade, and beyond it is the park. The Royal Museum of Painting and Sculpture, in the Prado, contains more than 2000 pictures. The National Library, founded by Philip V., contains 230,000 volumes. The University has an average attendance of 5000 students, and there are numerous colleges and schools, medical, military, law, &c. The manufactures are of small importance. Madrid only began to be a place of importance under Charles V. and in 1560 Philip II. declared it to be the capital. It is the creation of a century, for it has not increased much since the age of Philip IV. Pop. 387,080.

Mad'rigal, a short amorous poem, consisting of not less than three or four stanzas or strophes, and containing some tender and delicate, though simple thought, suitably expressed. The madrigal was first cultivated in Italy, and those of Tasso are among the finest specimens of Italian poetry. Several English poets of the time of Elizabeth and the Charleses wrote madrigals of notable grace and elegance, the chief names being Lodge, Withers, Carew, and Suckling.—The term is also applied to an elaborate vocal composition now commonly of two or more movements, and in five or six parts. The musical madrigal was at first a simple song, but afterwards was suited to an instrumental accompaniment. There are a number of famous English composers of madrigals.

Madura', a district of India forming part of the Madras presidency, mostly a plain drained by the Vaigai river; skirted on the south-west by the Travancore Hills; area 8400 square miles, pop. 2,168,680. The capital of the same name contains the vast palace of the ancient rajahs, now going to decay, and the Great Temple, one of the most remarkable monuments of Hindu architecture. The chief buildings of Madura are connected with the name of Tirumala Náyak, who reigned from 1623 to 1659. Near the town is a remarkable eminence, called, from its shape, the Elephant Rock. The town has been much improved under British rule. Pop. 73,807.

Madu'ra, an island of the Indian Archipelago, N.E. of Java, and separated from it by the Strait of Madura; 105 miles long, and 30 miles broad; and belonging to the Dutch. The island is not very fertile. The inhabitants, mostly Mohammedan, are governed by native princes. Cattle-rearing is the chief industry, while the chief products are maize, cocoa-nuts, tobacco, Jamaica pepper, and tamarinds. The principal town is Sumanap. Pop. 1,000,000.

Madvig, JOHAN NIKOLAI, Danish scholar, born 1804, died 1886, long professor of Latin in the University of Copenhagen. He is best known by his excellent Latin grammar translated into most European tongues.

Mæan'der, now MEINDER, a river of Asia Minor, which enters the Ægean. It was celebrated among the ancients for its winding course, and has given us the verb to *meander*.

Mæce'nas, CAIUS CILNIUS, a distinguished

Roman born between 73 and 63 B.C., died 8 B.C. He was the companion of the Emperor Augustus in nearly all his campaigns, and his most trustworthy counsellor in political matters. For the three years 18-15 B.C. he was invested with the government of Italy. His great glory, however, was as a patron of learning, and the friend of Virgil and Horace.

Maelar, a beautiful lake of Sweden, length about 75 miles; average breadth 12 miles; irregularly formed and dotted with innumerable islands. Stockholm is situated at its exit to the Baltic.

Maelstrom, a celebrated whirlpool off the coast of Norway, near the island of Moskoe, one of the Lofoddens. With a strong wind from the north-west the whirlpool rages violently, so as to be heard several miles, and to engulf small vessels which approach it.

Mæo'tis. See *Azof*, *Sea of*.

Maesto'so, an Italian musical term meaning in a majestic or lofty style.

Maestricht, or MAASTRICHT (mäs'triht; Latin, *Trajectus ad Mosam*), a town of Holland, capital of the province of Limburg, on the left bank of the Maas. It lies on the Belgian frontier, 56 miles east of Brussels, and 52 miles west by south of Cologne. Among the chief buildings are the church of St. Servaas, dating from the 10th century; another old church, and the town-hall (*Stadhuis*). Maestricht was once one of the strongest fortresses in Europe, but its fortifications were dismantled between 1871 and 1878. It was besieged, taken, and 8000 of its inhabitants massacred, in 1579, by the Spaniards, under the Duke of Parma; in 1673 it was taken by Louis XIV., and again by the French in 1748 and 1794. William III. of England failed to take it; and in 1830 its garrison resisted successfully the attacks of the Belgians. Pop. 30,489.

Mafra, a town of Portugal, province of Estremadura, 17 miles north-west of Lisbon, and near the coast. It is only noticeable for the magnificent building, erected here by John V. in 1717, in imitation of the Escorial of Spain, which forms a quadrangle, measuring east to west 760 feet, and north to south 670 feet, and includes a church, a royal palace, a college with a library of about 50,000 vols., and a monastery with 300 cells. Pop. 3021.

Magadoxo, MAGADOSHO, or MAKADISHU, a seaport on the east coast of Africa, lat.

2° N., with a considerable trade. Magadoxo is subject to the Sultan of Zanzibar, but its administration has been handed over to the Imperial British East African Co. Pop. 6000.

Magalhaens (mag'al-yà-ens), or **MAGELAN** (ma-gel'an), **FERNANDO DE**, a Portuguese navigator, who conducted the first expedition round the world; born about 1470; served under Albuquerque in the East Indies; distinguished himself at the taking of Malacca, in 1511; in 1519 received the command of a fleet of five ships from Charles V. of Spain, with which he sailed westward; entered the strait since called after his name, and discovered the Pacific Ocean. Subsequently he was killed in a skirmish with the natives on one of the Philippines, and his vessels were conducted to Spain by Juan Sebastian del Cano.

Magazines. See *Periodicals*.

Magda'la, a town and fortress of Abyssinia, nearly 9000 feet above the level of the sea, about 120 miles south-east of Gondar. Magdala acquired importance from having been stormed 12th April, 1868, by the British troops. See *Abyssinia*.

Mag'dalen, or **MAGDALENE**, **MARY**, that is, Mary of Magdāla, a woman mentioned in the New Testament as having had seven devils cast out of her, as watching the crucifixion, and as having come early to the sepulchre on the resurrection morning. She was erroneously identified as the 'woman who was a sinner' (Luke vii. 37), and hence the term Magdalen came to be equivalent to a penitent fallen woman.

Magdale'na, a large river of South America which rises in the central Cordillera of the Andes, in Ecuador; flows generally north through Colombia, and falls into the Caribbean Sea by several mouths; length 970 miles. The Magdalena is navigable as far as Honda, 435 miles from its embouchure.

Magdalen College, Oxford, was founded in 1458 by William of Waynflete, bishop of Winchester and lord high-chancellor of England.

Magdalene College, Cambridge was founded in 1519 by Thomas, Baron Audley of Walden.

Magdalen Institutions (see *Magdalen*) are intended to afford a retreat to penitent prostitutes, and the first was established in London, 1758.

Magdeburg (mäh'dé-burh), the capital of Prussian Saxony, and a fortress of the first

class, on the Elbe, 76 miles w.s.w. of Berlin, chiefly on the left bank of the river, which here divides into three arms. The chief buildings are the Dom or cathedral, erected in the 13th and 14th centuries, and repaired in recent times; the town-house, government buildings, exchange, central railway station, and theatre. The industries are very varied, embracing machinery, castings, armour plates, chemicals, spirits, pottery, sugar, beer, cottons, ribbons, leather, &c. The trade is extensive both by rail and river; for sugar Magdeburg is the chief centre in Germany. Magdeburg is a place of great antiquity, being a trading centre in the 9th century. It early distinguished itself in the Reformation. During the 'Thirty Years' war the town was besieged, stormed, and sacked by Tilly, when 20,000 persons are said to have been murdered. Pop. 202,325.

Magellan. See *Magalhaens*.

Magellan, **STRAIT OF**, separates the continent of South America from Tierra-del-Fuego, 300 miles long; varies in breadth from 5 to 50 miles, and forms communication between the South Atlantic and South Pacific Oceans. The number of obstructing islands makes the channel difficult of navigation. The strait was discovered in 1520 by Fernando Magalhaens.

Magellan'ic Clouds, two oval-shaped cloud-like masses of light in the southern hemisphere near the pole, consisting of swarms of stars, clusters, and nebulae of every description. They cover spaces in the heavens of 42 and 10 square degrees respectively.

Magendie (mā-zhan-dē), **FRANÇOIS**, French physiologist, born 1783, died 1855. Educated for the medical profession in Paris, he was made demonstrator of anatomy by Boyer; became physician to the Hôtel-Dieu; was elected a member of the Academy of Sciences in 1819; and in 1831 received the anatomy professorship in the College of France. By his extensive use of vivisection he made important discoveries in physiology, and he published important works.

Magenta (mā-jen'tā), a small town of North Italy, 14 miles east from Milan, on the high road to Novara. On 4th June, 1859, Magenta was the scene of a decisive victory won by the French and Sardinians over the Austrians, and it, in consequence, gives the title of Duke of Magenta to Marshal Macmahon. Pop. 5573.

Magenta, a brilliant blue-red colouring substance derived from aniline.

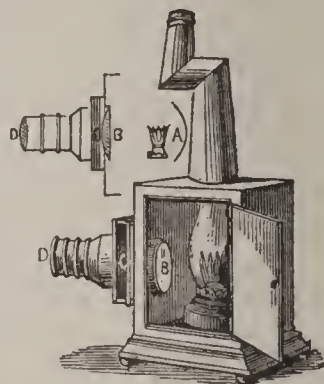
Maggiore, LAKE. See *Lago Maggiore*.

Magi (mā'ji), the hereditary priests among the Medes and Persians, set apart to manage the sacred rites, and preserve and propagate the sacred traditions, acting also as diviners and astrologers. They possessed great influence both in public and private affairs, conducted the education of the princes, &c. Their order was reformed by Zoroaster. (See *Zoroaster*.) The name came also to be applied to holy men or sages in the East.

Magic, the art or pretended art or practice of producing wonderful effects by the aid of superhuman beings or of departed spirits or the occult powers of nature. The word is used to include a mass of beliefs and practices which bear on matters beyond the ordinary known actions of cause and effect. A large proportion of magical rites are connected with the religious beliefs of those using them, their efficacy being ascribed to supernatural beings. There is, however, a non-spiritual element in magic which depends on certain imagined powers and correspondences in nature, that can be utilized in various ways. (See *Alchemy, Astrology, Charm, Divination, Witchcraft*.) In savage countries the native magician is often sorcerer and priest, and sometimes chief of the tribe. Among the ancient Egyptians magic was worked into an elaborate system and ritual, and it was regularly practised among the Babylonians and Assyrians, as well as in Greece and Rome. Alexandria, from the 2d to the 4th century, became the headquarters of theurgic magic, in which invocations, sacrifices, diagrams, talismans, &c., were systematically employed. This system, influenced by Jewish magical speculation, had a strong hold in mediæval Europe, and many distinguished names are found among its students and professors. The magic which holds a place still among the illiterate and ignorant classes has come down by tradition in popular folk-lore. The name *natural magic* has been given to the art of applying natural causes to produce surprising effects. It includes the art of performing tricks and exhibiting illusions by means of apparatus, the performances of automaton figures, &c. See *Legerdemain*.

Magic Lantern, a kind of lantern invented by Kircher, a German Jesuit (1604–80), by means of which small pictures or figures are represented on the wall of a dark room or on a white sheet, magnified to any size at pleasure. It consists of a closed lantern or box, in which are placed a lamp and a con-

cave mirror (as at A), which reflects the light of the lamp through the small hole of a tube in the side of the lantern, which is made to draw out. At the end of this tube, next to the lamp, is fixed a plano-convex lens (B), and at the other a double-convex lens (D). Between the two lenses are successively placed (at C) various slips of glass, with transparent paintings, representing various subjects, which are thrown in a magnified form on the wall or screen opposite to the lantern and spectators. It has been vastly improved of late, and the substitution of the oxyhydrogen and electric lights for the oil lamp has added much to the effectiveness of its displays; while photography applied to the production of objects has almost indefinitely increased its resources.



Magic Lantern.

Magic Square is a term applied to a series of numbers in arithmetical progression, arranged in equal and parallel rows and columns, in such a manner that the vertical, horizontal, and diagonal columns when added shall give the same sums. The question of magic squares is in itself of no use, yet it possesses a curious interest to those

2	7	6
9	5	1
4	3	8

Magic Square.

interested in the properties of numbers. A specimen of these squares is here given. There are also *Magic Circles, Magic Cubes, Magic Cylinders, Magic Spheres*, &c., in all of which the same result is brought about by various arrangements of the terms of an arithmetical series.

Magilp (ma-gilp'), a gelatinous compound produced by mixing linseed-oil and mastic varnish together, used by artists as a vehicle in oil-painting. The proportions vary according to the work. It is thinned with turpentine.

Maginn (ma-gin'), WILLIAM, LL.D., born at Cork 1794, died at Walton-on-Thames 1842. He was educated at Trinity College, Dublin, and established himself as a literary man in London. He was for long a regular contributor to Blackwood's Magazine, and was successively editor of the Standard, of

Frazer's Magazine, and other publications. Notwithstanding his splendid scholarship and talent for popular writing, his irregular habits brought him to bankruptcy and a debtor's prison. His Homeric Ballads, Shakspeare Papers, &c., were collected and published after his death.

Magione (mà-jì-ō'nā), a town of Central Italy, 8 miles w.s.w. of Perugia. Pop. 6980.

Magistrate, a public civil officer invested with the executive government or some branch of it. In this sense a king is the highest or first magistrate in a monarchy, as is the president in a republic. But the word is more particularly applied to subordinate officers, to whom the executive power of the law is committed, either wholly or in part, as governors, intendants, prefects, mayors, justices of the peace, and the like. In England the term is usually restricted to justices of peace in the country, and to police and stipendiary magistrates in London and the larger towns; and in Scotland to the provost and bailies in burghs.

Magna Charta Liberta'tum, the Great Charter of Liberties, a document forming part of the English constitution, and regarded as one of the mainstays of English liberty, extorted from King John by the confederated barons in 1215. Its most important articles are those which provide that no freeman shall be taken, or imprisoned, or proceeded against except by the lawful judgment of his peers or by the law of the land; and that no scutage or aid shall be imposed in the kingdom (except certain feudal dues from tenants of the crown), unless by the common council of the kingdom. The remaining and greater part of the charter is directed against abuses of the king's power as feudal superior. It originally contained sixty-three clauses; subsequent confirmations altered the number of these till 1225 when it took its final and accepted legal form with thirty-seven clauses. The most accurate and complete copy of the original charter is that preserved in Lincoln Cathedral. The board of commissioners on the public records ordered a facsimile of it to be engraved, and it has been frequently translated into English.

Magna Græcia, the collective name given to the Greek cities and settlements in Southern Italy mostly founded in the 8th century B.C. by different Greek peoples. The Chalcidians founded Rhegium about 730 B.C.; and subsequently Croton, Sybaris, Tarentum, &c., were founded. These colonies and

their offshoots reached a great pitch of wealth and power in the 7th and 6th centuries B.C. Mutual discord, however, gradually weakened them, and their independent existence came to an end in the 3d century B.C., when they were conquered by the Romans.

Magne'sia, the name of two ancient cities of Asia Minor: (1) A city of Ionia on the river Lethæus, a tributary of the Mæander. (2) A town of Lydia on the southern bank of the Hermus. See *Manisa*.

Magne'sia, a white tasteless earthy substance, possessing alkaline properties, and having a specific gravity of 2.3. It is absorbent, antacid, mildly cathartic, and almost insoluble. It is found native in the state of hydrate and carbonate, and exists as a component part of several minerals. In commerce, pure magnesia is generally distinguished by the term *calcined magnesia*, and is readily obtained by exposing its hydrated carbonate to a red heat. The hydrated carbonate goes by the name of *magnesia* or *magnesia alba*. The chief use of magnesia and its carbonate is in medicine. See *Magnesium*.

Magnesian Limestone, a yellowish rock composed of carbonates of lime and magnesia, the latter amounting in some cases to nearly a half. There are several varieties, more or less useful for building or ornamental purposes, which are included under the generic name dolomite. The same name is also given to the whole Permian formation, from this rock being very largely developed in it.

Magne'sium, the metallic base of magnesia; chemical symbol Mg, atomic weight 24.5. It may be obtained by decomposing chloride of magnesium by means of potassium. It is of a white colour like silver; its lustre is metallic and brilliant; it is very malleable, and fuses at a red heat. Heated to redness in oxygen gas, it burns with brilliancy, and combining with oxygen becomes magnesia, or the oxide of magnesium (MgO). The magnesium light is rich in chemical rays, and is now employed to some extent in photography. The chief salts are the carbonate, the chloride, the sulphate (Epsom-salt), the phosphates and the silicates, among which are such minerals as chrysolite, meerschaum, soapstone, and serpentine.

Magnet. See *Magnetism*.

Magnetism, the science which treats of the phenomena exhibited by magnets,—phenomena due to one of those forces which, like electricity and heat, are known only

MAGNETISM.

by their effects. The phenomena of magnetism were first observed in the loadstone or *magnet* (so named from Magnesia in Asia Minor). The loadstone is a kind of iron ore (magnetic iron ore), and is found in many parts of the world, especially in the Scandinavian peninsula and in Siberia. It has the power of attracting small pieces of iron or steel, and when suspended in such a way as to be able to move freely, always points to what are called the magnetic poles of the earth, that is nearly north and south. A piece of loadstone forms a *natural magnet*, and has the further remarkable power of giving all its own properties to hard iron or steel when these bodies are rubbed by it. A bar or mass of iron or steel to which the peculiar properties of a natural magnet have been imparted by friction from other magnets or by electric *induction* is called an *artificial magnet*. When freely suspended, all magnets, natural and artificial, rest with their lengths in a northerly and southerly direction, and this property is utilized in the well-known compass. They attract iron and other magnetic substances with a force increasing from the middle of the magnet to its extremities, which are called its *poles*. The magnetism at the two poles is different, that pole which points to the north is distinguished as the north or north-seeking or austral pole, or by the sign plus (+); that which points to the south as the south or south-seeking or boreal pole, or by the sign minus (-). The poles of the same denomination repel each other, while those of different names have mutual attraction, thus resembling the two electricities, positive and negative. The intensity of this attraction and repulsion varies inversely as the square of the distance, a law which also governs electrified bodies. Magnetism pervades the earth as electricity does the atmosphere. It assumes a totally different form in different substances; the metals iron, nickel, and cobalt being strongly attracted by the magnet; others such as bismuth, copper, silver, gold, &c., being as strongly repelled. (See *Diamagnetic*.) The space in the neighbourhood of a magnet is called the *magnetic field*; a piece of soft iron brought into this space becomes magnetic, but it loses its magnetism as rapidly on removal from the field. (See *Induction, Magnetic*.) Steel has *coercive force*, in virtue of which it requires time for magnetization, and retains its magnetism on removal from the field. Hard steel may be made magnetic by rub-

bing it several times in the same direction with a powerful magnet, and hence it is easy to multiply magnets. The most powerful permanent magnets are produced by rubbing bars of steel on electro-magnets (see *Electro-magnetism*), or by moving them backwards and forwards along the axis of a coil of wire in which an electric current is passing. A bar is magnetized to saturation when its magnetism is as great as it can retain without future sensible loss. When a magnet is broken into a number of pieces each piece is found to be magnetic, and its north pole is found to have been directed towards the north pole of the unbroken magnet. When these pieces are put together again poles placed in contact nullify each other, and the original magnet is reproduced.

Terrestrial magnetism, which pervades the whole earth, is extremely complicated. It becomes manifest by its influence on the magnetic needle, varying with time and place over the earth. One pole of the needle points towards the north, the other towards the south. There are, however, only two lines on the surface of the earth on which it points directly north and south, and where the magnetic and geographical meridians appear to coincide. Elsewhere the needle deviates more or less from the true north. This is termed the declination of the needle, and varies from place to place, and in the course of time at the same place. (See *Isogonic*.) When a needle is balanced on a horizontal axis so that it can turn in a vertical plane, the extremity attracted by the nearer magnetic pole of the earth points more or less downwards. (See *Dipping-needle*.) The angle thus made is called the dip or inclination, and the lines marking equal inclinations on a map are called *isoclinical* lines. They intersect the isogonal lines, and the dip increases towards the perpendicular as the magnetic poles are neared. These magnetic poles do not coincide with the geographical poles, the northern being in $70^{\circ} 5' \text{ N.}$ and $96^{\circ} 43' \text{ W.}$ The southern is probably at $73\frac{1}{2}^{\circ} \text{ S.}$ and $147\frac{1}{2}^{\circ} \text{ E.}$ There are two foci of maximum force in the northern hemisphere and two in the southern. In the northern hemisphere the stronger focus is assumed to be in 52° N. and 90° W. , and the weaker in 70° N. and 115° E. In the southern hemisphere the stronger focus is assumed to be in 65° S. and 140° E. , and the weaker probably in 50° S. and 130° E. The earth's magnetism is subject to vast unaccountable commotions or storms of immense

extent, which occur at irregular intervals and are of short duration. They are often connected with manifestations of electrical phenomena, such as the aurora borealis, or thunder-storms. These disturbances are made manifest by irregular motions of the magnetic needle. The various phenomena connected with terrestrial magnetism are now automatically recorded, and systematized in the interests of meteorology. The magnetic equator or line of no dip crosses the terrestrial equator in several places, extending alternately on each side, but never deviating more than 12' from it.

Magnetism, ANIMAL. See *Mesmerism*.

Magneto-Electricity treats of the currents of electricity produced in a conductor when its position is changed relatively to a magnetic field (see *Induced Current*), whereas electro-magnetism (which see) treats of magnetization produced by currents.

Magneto-Electric Machines. In magneto-electric machines an electro-magnet of compact form called the armature is caused to rotate near the poles of a powerful fixed magnet, in such a manner that the core of the armature becomes magnetized first in one direction and then in the opposite, by the inductive action of the poles of the fixed magnet. Every change in the magnetization of the core induces a current in the coil wound upon it. Hence currents in alternately opposite directions are excited in this coil, their strength increasing with the speed of rotation. It is now usual in powerful machines of this class to employ electro-magnets as the fixed magnets, and the current which feeds these fixed magnets (called the *field magnets*) is often the current generated by the machine itself. The machines in this case are called dynamo machines. This name was originally confined to machines which thus supply the current for their own field magnets; but it is now applied to any machine in which the field magnets are electro-magnets. Such machines, of which there is an enormous variety, driven by steam-engines or other powerful motors, are now almost universally employed when electric currents are required on a large scale, as in electric lighting. See the articles *Dynamo*, *Electric Light*, *Electro-magnet*, *Electro-magnetism*, *Electro-motors*.

Magnetometer, an instrument employed for observing the magnetic declination, and also for other absolute magnetic measurements. They are of various forms and are

usually self-recording. See *Declinometer*, *Dipping-needle*.

Magnificat, the song of the Virgin Mary, Luke i. 46-55: so called because it commences with this word in the Latin Vulgate. It is sung throughout the Western Church at vespers or evensong.

Magnifying-glass. See *Microscope*.

Magno'lia, a genus of trees and shrubs, type of the nat. order Magnoliaceæ; named from *Pierre Magnol*, a French botanist of the 17th century. The species, which chiefly inhabit North America, Northern India, China, Japan, and other parts of Asia, are trees much admired on account of the elegance of their flowers and foliage, and are in great request in gardens. In their native countries some of them attain great height, and have flowers 10 inches across. The bark of the root of *M. glauca*, or the beaver-tree, is an important tonic. *M. tri-petāla*, or umbrella-tree, has also tonic properties. The cones of *M. acumināta* yield a spirituous liquor, employed in Virginia in rheumatic affections. *M. grandiflōra*, or big-laurel, and *M. conspicua* or *Yulan*, the yulan or Chinese magnolia, grow well in the south of England, and are splendid ornamental trees. The yulan is remarkable in that it flowers in spring before the leaves expand.

Magog. See *Gog*.

Magot. See *Barbary Ape*.

Magpie, a bird of the genus *Pica*, belonging to the Corvidæ or crow family. There are several species, two of which belong to America. The common European magpie (*P. caudāta*) is about 18 inches in length; the plumage is black and white, the black glossed with green and purple; the bill is stout, and the tail is very long, whence its specific name *caudāta*. The magpies continue in pairs throughout the year, and prey on a variety of food, chiefly animal. They are determined robbers of other birds' nests, destroying the eggs and young birds. In captivity they are celebrated for their crafty instincts, their power of imitating words, and their propensity to purloin and secrete glittering articles.

Magyars, the Hungarians. See *Hungary*.

Mahabalesh'war, a sanitarium and hill-station, Satara district, Bombay; 114 miles S.E. of Bombay. Permanent population about 3000.

Mahaban', a decayed Indian town and place of pilgrimage, in Muttra district, North-western Provinces. Pop. 6182.

Mahābhā'rata (literally, the great history of the descendants of Baharata), an ancient Indian epic of about 220,000 lines, divided into eight books, the leading story of which narrates the history of the war between the 100 sons of Dhritarāshtra and their cousins, the five sons of Pāndu, for the possession of the ancient kingdom of Bharata, which is said to have comprised the greater part of India. With its numerous extensive digressions and episodes, it forms a cyclopædia of Hindu mythology, legendary history, and philosophy. The authorship is attributed to Vyāsa, 'the arranger,' but this simply means that the materials of which the poem consists were at some time or other welded together with a certain order and sequence so as to form one work.

Mahade'va (Skr.; literally, the great god), a name of Siva, one of the Indian deities, from which the sacred Ganges is fabled to have sprung.

Mahaffy, JOHN PENTLAND, D.D., born in Switzerland in 1839; educated in Germany and latterly at Trinity College, Dublin, where he became a fellow in 1864, and was appointed professor of ancient history in 1871. He is author of *Lectures on Primitive Civilization*; *Social Life in Greece from Homer to Menander*; *History of Classical Greek Literature*; *Rambles and Studies in Greece*; *Commentary on Kant*; &c.

Maha'leb, a species of cherry (*Cerāsus Mahaleb*), whose fruit affords a violet dye and a fermented liquor like kirsch-wasser. It is found in the middle and south of Europe. Its flowers and leaves are used by perfumers, and its wood by cabinet-makers.

Mahānadi (ma-hā'na-dē; or MAHANUDDY) **River**, a river in Southern Hindustan which flows through the Central Provinces and Orissa, falling by several mouths into the Bay of Bengal, after a course of 520 miles. It has several large tributaries, and in connection with it is an extensive canal system, capable, when completed, of irrigating an area of 1,600,000 acres. During the rains the river is navigable for 300 miles from its delta.

Mahanoy City, a town of the U. States, Schuylkill county, Pennsylvania, 80 miles from Philadelphia, in the middle of a rich anthracite coal district. Pop. 1890, 11,286.

Mahara'jah (literally, a great king), a title applied in courtesy to every Indian rajah, or to any person of high rank or deemed holy.

Maharajpur, a village in Gwalior State,

Central India, 15 miles N.W. of Gwalior fort, scene of the defeat of Scindia's forces by the British under Sir Hugh Gough, 29th Dec. 1843.

Mahdi (mä'dē; Arabic, the director or leader), a name assumed by some of the successors of Mohammed, particularly applied to the twelfth imam, the lineal descendant of Mohammed, born A.D. 868. He mysteriously disappeared, being probably murdered by a rival, and the belief was that he would remain hidden until the 'last days,' when he would reappear, and at the head of the faithful spread Mohammedanism over the world. Many professed Mahdis have appeared from time to time in Africa as well as Asia, the latest being Mohammed Ahmed, the leader of the Sudanese insurrection (1883-85). He was born at Dongola in 1843, died 1885. He studied Mohammedan theology at Khartoum and Berber, and at 25 years of age he retired to the island of Aba in the White Nile, where he lived in solitude for fifteen years. At the age of forty he took up the prophetic rôle, and his short victorious career began. See *Egypt*, *Soudan*.

Mahé, an island in the Seychelles or Mahé Archipelago, in the Indian Ocean, about 17 miles long and 4 miles broad. It contains Port Victoria, the capital and head-quarters of the British East African squadron.

Mahé, a French settlement, Southern India, within the limits of Malabar district, Madras presidency, 40 miles N.N.W. of Calicut, at the mouth of a small river of the same name. Formerly a place of considerable importance and trade. Pop. 8280.

Mahmud (mä'mud), Sultan of Ghazna, the founder of the Mohammedan Empire in India, born at Ghazna about 970, died 1030. His father, Sabaktagin, governor of Ghazna, owned a nominal allegiance to Persia, but was really independent. On his death Mahmud put aside his elder brother; formed an alliance against the Persian monarch, overthrew his kingdom and laid the foundation of an extensive empire in Central Asia (999). He then turned his attention to India, and in a series of twelve invasions secured a great amount of treasure, and vastly extended his power. He was a patron of literature, and brought many men of learning about his court, among whom was the poet Firdusi (which see). He established large educational institutions at Ghazni, and spent vast sums on public works. See *Ghaznavides*.

Mahmud I., Sultan of Turkey, born 1696; reigned 1730–50.—**MAHMUD II.**, Sultan of Turkey, born 1785, died 1839; placed on the throne by the Janizaries after the murder of his predecessor, 1808. The chief events of his reign are the war with Russia from 1808 to 1812, which cost him Bessarabia and the provinces of Servia, Moldavia, and Wallachia, as settled by the treaty of Bucharest; the war of Greek independence, which ended in the separation of that country, and the destruction of the Turkish fleet at Navarino, 1820–28; the extermination of the Janizaries, 1826; the treaty of Adrianople with the Russians, who were on the point of entering Constantinople, 1829; the independence of Egypt under Mehemet Ali, and the new treaty of Unkiar-Skelessi with the Russians, 1832–33.

Mahog'any, the wood of the *Swietenia mahogöni*, a lofty and beautiful tree, indigenous to Central America and the West Indies, belonging to the nat. order Cedrelaceæ. It grows most abundantly, and attains its greatest development between 10° N. lat. and the Tropic of Cancer. It reaches maturity in about 200 years, and grows to a height of 40 to 50 feet, diameter 6 to 12 feet. The wood is hard, compact, reddish-brown, and susceptible of a brilliant polish. It is one of the best and most ornamental woods known, and is of universal use in the making of furniture. It is imported chiefly from Mexico and British Honduras. That which is imported from the West Indies is called 'Spanish' mahogany, and is the most valued.

African mahogany is the wood of *Swietenia senegalensis*, and is brought from Sierra Leone. *Indian mahogany* is the wood of *S. febrifuga*, and *S. chloroxylon*, two large trees found in mountainous districts of India. *Ceylon mahogany* is the *Artocarpus integrifolia*, widely cultivated throughout the warm parts of Asia. *Australian mahogany* is the red gum (*Eucalyptus marginata*).

Mahomet. See *Mohammed*.

Mahon (mä'on), LORD. See *Stanhope, Henry, Earl*.

Mahon. See *Port Mahon*.

Mahon'y, FRANCIS, known as 'Father Prout,' born at Cork 1804, died at Paris 1866. He was educated at a Jesuit seminary at Amiens, studied theology at Paris, received clerical ordination, and officiated for a short time at the chapel of the Bavarian Legation, London. About 1834 he began the contribution of an amusing series of articles known as the 'Prout Papers' to Fraser's Magazine. In 1846 he became Roman correspondent to the Daily News, his letters being afterwards republished under the title of Facts and Figures from Italy. For the last twelve or fifteen years of his life he was Paris correspondent for the Globe. Reliques of Father Prout was published in 1836 and 1860, and Final Reliques in 1876.

Mahrat'tas, a native Hindu race, said to have migrated from Northern India, who in the reign of Shah Jehan occupied a large tract of Central and Western India. They came into prominence about the middle of the 17th century, when the chief Sevaji, taking advantage of the weakness of the Moguls and the wars of Aurungzebe, extended his conquests in various directions, had himself crowned king in 1674, and established the Mahratta Empire. After his death long minorities and the incompetency of the sovereigns caused the powers of the state to fall into the hands of the *Peishwa* or prime-minister, who became the acknowledged head of a Mahratta confederacy. This confederacy held together till 1795, but subsequent wars and disturbances reduced the *Peishwa* to the position of a British dependant, and Scindia, Holkar, and the Rajah of Berar were able to take the position of independent sovereigns. The confederacy came to a final end in 1818, and Scindia, Holkar, the Guicowar of Baroda, and the Rajah of Kolapore became dependent princes under British protection.

Mai (mī), ANGELO, CARDINAL, Italian scholar, born 1782; died 1854. In 1799 he entered the novitiate of the Society of Jesus, afterwards became a priest, and in 1808 obtained the post of librarian at the Ambrosian Library of Milan. In 1819 he became chief librarian of the Vatican, held the office of secretary of the Propaganda (1833–38), was created cardinal, and held several high offices in the church. Through



Mahogany (*Swietenia mahogöni*).

his labours in the decipherment of palimpsests he recovered some fragments of the orations of Cicero and writings of Philo, Porphyry, &c. He rendered valuable services to scholarship.

Maia, in Greek mythology, one of the Pleiades, the daughter of Atlas and mother of Hermes (Mercury).

Maidenhair, the name given to the *Adiantum Capillus-venëris*, an elegant fern with a creeping scaly rhizome, and bipinnate fronds, the leaflets of which are between rhomboidal and wedge-shaped, margined with oblong sori, and more or less deeply lobed. It is found growing on rocks and walls in Britain, and possesses demulcent and mucilaginous properties.

Maidenhair-tree, the *Salisburia adiantifolia*, a deciduous tree of the yew family, a native of Japan, so called from the likeness of its leaves to the maidenhair fern.

Maidenhead, a municipal borough, England, in the county of Berks, 12 miles E.N.E. from Reading, near the right bank of the Thames. Its first charter dates from the reign of Edward III. Pop. 1891, 10,607.

Maiden-plum, the name of two West Indian plants, *Comocladia integrifolia* and *C. dentata*, belonging to the nat. order Anacardiaceæ. They yield a milky juice which, on exposure to air, becomes an indelible black dye.

Maid of Norway, Margaret, the daughter of Eric, king of Norway, and Margaret, the daughter of Alexander III. of Scotland. On the death of Alexander she was acknowledged queen of Scotland, and was betrothed to Edward, son of Edward I. of England, but died on her passage to England in 1290.

Maid of Orleans. See *Joan of Arc*.

Maids of Honour. See *Honour, Maids of*.

Maidstone, a municipal and parliamentary borough of England, county of Kent, 32 miles S.S.E. from London, on the banks of the Medway, here crossed by a handsome bridge completed in 1879. There is a fine old church, one of the largest parochial buildings in the kingdom, supposed to be of the 14th century. Paper is largely manufactured in the vicinity, and an extensive trade is carried on in fruit and hops. It sends one member to parliament. Pop. 1891, 32,150.

Maigre, an acanthopterygious fish of the genus *Sciæna*; more particularly the *S. aquila*, much sought after as a food-fish.

It is common in the Mediterranean and the Eastern Atlantic, and is a strong, powerful fish, often measuring 6 feet in length. It is remarkable for making a sort of whirring noise as it moves through the water.

Mail, COAT OF. See *Arms and Armour*.

Mail-coaches. See *Coach*.

Mailed-cheeks, a name given to the Sclerogenidæ or Triglidæ, a family of acanthopterygious fishes, from their having certain bones of the head and gill-covers enlarged to form a defence for the cheeks. Gurnards and bull-heads are members of this family.

Maimachin, MAIMATCHIN, a trading town of Mongolia, adjoining the Russian emporium of Kiachta.

Maimansingh, a British district in the Dacca division, Bengal; area, 6287 square miles. It is for the most part level and open, and is well cultivated. Rice and jute are among the chief agricultural products. The Jumna and the Brahmaputra are the chief rivers, and the administrative headquarters are at Nasirabad. Pop. 3,051,966.

Maimonides (mī-mon'i-dëz), properly *Moses Ben Maimon Ben Joseph*, Jewish scholar, born at Cordova about 1131-39, died about 1201-9. He received an excellent education, studied Jewish and Arabic literature and Greek philosophy, attended the lectures of the Arabic philosophers, and made himself acquainted with the healing art. Driven from Spain by persecution, he ultimately settled at Old Cairo, where he attained the highest place in the estimation of his co-religionists; became physician to the Sultan of Egypt and superintendent of the Jewish communions. He systematized the whole mass of Jewish tradition, and demonstrated the principles on which Judaism is based. His books were widely circulated in Europe by means of Latin translations. His best writings in Arabic are the Guide of the Erring, an exposition of Judaism; a Compendium of Logic; a Commentary on the Mishna; an Exposition of the 613 Laws of Moses, &c. He wrote in Hebrew a complete system of the Talmudic Judaism.

Main (mīn), a river of Germany, which rises in the Fichtelgebirge, flows in a generally westerly direction for a distance of 300 miles, and joins the Rhine a little above the town of Mainz. It is navigable for about 200 miles, and has recently been improved so as to admit the largest Rhine steamers to Frankfort. By means of King

Ludwig's canal it affords through navigation to the Danube.

Maina. See *Mainotes*.

Maine, one of the eastern and maritime United States of North America, bounded on the east and north-east by New Brunswick, north and north-west by Quebec, west by New Hampshire, and south by the Atlantic Ocean; area, 33,040 square miles. It is mostly an elevated country, but hilly rather than mountainous. The state is almost completely traversed by navigable rivers, the principal of which are the Penobscot and Kennebec; and in the interior are numerous lakes. The coast abounds with islands, the largest of which is Mount Desert, 15 miles long and 12 miles broad; and is indented with numerous bays and inlets, the principal of which are Penobscot, Casco, and Passamaquoddy. Grass lands are extensive, and Indian corn, wheat, barley, rye, and flax are the chief crops. The leading industry is the production of lumber. Not long ago the forests covered about one-half the surface of the state, but they are rapidly diminishing. Marble, slate, limestone, and granite are abundant, and iron, lead, tin, copper, and zinc are found in considerable quantities. The fisheries give employment to a large portion of the population; and other industries are ship-building, the manufacture of cotton and woollen fabrics, &c. There are about 1200 miles of railways, and lines of steamers ply regularly from the larger ports. Augusta, on the Kennebec, is the seat of government, but Portland is the principal town, and a seaport of great importance. The state sends two senators and four representatives to congress. The Maine prohibitory liquor laws date from 1846. In their present form they forbid the manufacture for sale of all intoxicating liquors except cider. No person is allowed to sell intoxicating liquors for tippling purposes; the necessary sale of such liquors for medicinal, mechanical, and manufacturing purposes being under the control of a state commissioner. The law, however, is much evaded. Pop. 1890, 661,086.

Maine, an ancient province of France, lying immediately s. of Normandy, and comprising the modern departments of Sarthe, Mayenne, and parts of Orne and Eure-et-Loir. It was part of the French dominions of Henry II. of England, and was wrested from John by Philip Augustus.

Maine, SIR HENRY JAMES SUMNER, LL.D., F.R.S., English jurist, born 1822;

graduated at Pembroke College, Cambridge, in 1842. He was appointed regius professor of civil law in the same university, 1847, and reader on jurisprudence at the Middle Temple, 1854. From 1862 to 1869 he was law member of the Supreme Council of India, and on his return home he was elected Corpus professor of jurisprudence at Oxford. In 1877 he became Master of Trinity Hall, Cambridge. His chief works are *Ancient Law in Connection with the Early History of Society*, and *its Relation to Modern Ideas*; *Village Communities in the East and West*; *The Early History of Institutions*; *Dissertations on Early Law and Custom*; the *Whewell Lectures on International Law*, delivered before the University of Cambridge, 1887; &c. He died in 1888.

Maine de Biran (mān-dé-bērān), FRANÇOIS PIERRE GONTHIER, French philosopher, born 1766, died 1824. He entered the life-guards of Louis XVI. in 1785, and was wounded at Versailles in October 1789, but was not concerned in the revolution which followed. He opposed Napoleon in the latter part of his reign, and became a legitimist at the restoration. His chief philosophical essays are: *Influence de l'Habitude*; *Sur la Décomposition de la Pensée*; *Sur l'Apperception Immédiate*, and *Rapports du Physique et du Moral*. Maine de Biran's importance as a philosopher is chiefly due to his giving the direction to philosophic speculation afterwards developed in the school founded by Victor Cousin.

Maine-et-Loire (mān-e-lwār), a western department of France; area, 2750 square miles. It has a gently-undulating surface, the slopes of which are generally covered with vines, while the plains are of great fertility. About one-half of the entire area is arable. Some of the white wines produced are much esteemed. The Loire traverses it almost centrally, east to west, and receives within the department the Maine, formed by the united streams of the Loir, Sarthe, and Mayenne. The manufacture of cotton, linen, and woollen tissues is important. Pop. 1891, 518,589.

Maine Liquor Law. See under *Maine*.

Mainotes, the inhabitants of the mountainous district of *Maina*, the s. extremity of the Morea, in the Grecian province of Laconia. They remained almost independent during the Turkish domination, and were among the first to distinguish themselves in the Greek revolution.

Mainpuri (mīn-pu-rē'), a district and town of British India, Agra division, North-western Provinces. Area of district, 1697 square miles; pop. 801,216. Mainpuri, the capital of the district, on the Agra branch of the Grand Trunk Road, has a pop. of 20,236.

Maintenance, CAP OF. See *Cap*.

Maintenon (mañ-tē-nōñ), FRANÇOISE D'AUBIGNÉ, MARCHIONESS DE, wife of Louis XIV. and grand-daughter of Henry the Fourth's friend Theodore Agrippa D'Aubigné, was born in 1635, in the prison of Niort in Poitou, where her father, a profligate adventurer, was then confined. Left quite destitute on his death in her tenth year, Mademoiselle D'Aubigné spent her youth in dependence on her rich relatives, and was glad to contract a nominal marriage with the famous wit Scarron, a deformed, old, and infirm man. Her beauty, liveliness, and propriety of conduct gained for her powerful friends among those who frequented her husband's house; and on Scarron's death she was intrusted with the charge of the children born to Louis XIV. by Madame de Montespan. She assumed this office in 1669, and played her cards so dexterously that the king married her privately, probably in 1685, when her age was fifty and his own forty-seven. For the remaining years of his life she was his most confidential adviser. She was a virtuous woman, and a devout and bigoted Catholic, ambitious and resolute, but disinterested and charitable. Her published letters give her a creditable place in French literature. She died in 1719, at the nunnery or school of Saint Cyr, which she herself had founded.

Mainz (mīnts; English, *Mentz*; French, *Mayence*), a fortified town of Germany, in the grand-duchy of Hesse, finely situated on the left bank of the Rhine, opposite the mouth of the Main, 20 miles w.s.w. Frankfurt. The Rhine is here crossed by a bridge connecting Mainz with the small town of Castel, which is within the system of fortifications. There is also a railway bridge. The older part of the town has been mostly modernized since the destruction caused by a powder-magazine explosion in 1857, and an extensive new quarter has been added since the recent widening of the fortified circuit. Among the more interesting buildings are the cathedral (recently restored), a vast building of red sandstone, finished in the 14th century, adorned with several finely painted windows, frescoes, and a great

number of ancient and curious monuments; the former electoral palace, now containing the city library (150,000 vols.), picture gallery, museum, &c.; the old collegiate church of St. Stephen, a fine specimen of Gothic architecture; the grand-ducal castle; the courts of justice; the government buildings; the town-hall, a new renaissance structure; the theatre, central railway station, Gutenberg's house and other buildings associated with the invention of printing, &c. There is a fine statue of Gutenberg by Thorwaldsen. The handsome new quay, about 330 feet in breadth, along the Rhine, affords a pleasant promenade; and there are several docks. The manufactures embrace leather, furniture, hardware, carriages, tobacco, beer, chemicals, musical instruments, &c. The trade, particularly transit, is extensive. Mainz was for long the first ecclesiastical city of the German Empire, of which its archbishop-elect ranked as the premier prince. Its history during the 16th century is of considerable interest in connection with the progress of the Reformation. Pop., 1890, 72,059.

Maiolica (mā-yol'i-kā). See *Faience*.

Mair, JOHN. See *Major*.

Maire, LE, STRAITS OF, a channel between Terra del Fuego and Staten Island, named from a Dutch pilot who discovered it in 1616.

Maistre (mā-tr or mās-tr), JOSEPH MARIE, COMTE DE, Italian statesman and polemical writer, born at Chambéry 1754, died at Turin 1821. In 1803 he was sent ambassador to St. Petersburg, returning to Turin in 1817, when he became a member of the Sardinian ministry. He was a reactionary in politics, religion, and philosophy, a supporter of absolute monarchy, and of the infallibility of the pope. His principal writings are *Du Pape*, *De l'Eglise Gallicane*, and the *Soirées de St. Petersburg*.—His younger brother, XAVIER DE MAISTRE, born at Chambéry 1763, died at St. Petersburg 1852, is chiefly famous for his *Voyage autour de ma Chambre*, a delightfully fantastic piece of work.

Maitland, a town in New South Wales, 95 miles north of Sydney, on the Hunter River. It comprises two distinct municipalities, East Maitland and West Maitland, separated from each other by Wallis Creek, over which is an excellent bridge. It is situated in the midst of a very fertile agricultural district, and coal of excellent quality and unlimited quantity is found in the neighbourhood. The industries comprise

coach-building, brewing, boot-making, &c. Population of East and West Maitland (1891), 10,214.

Maitland, JAMES. See *Lauderdale*.

Maitland, JOHN. See *Lauderdale*.

Maitland, SIR RICHARD (Lord Lethington), Scottish poet, lawyer, and statesman, born 1496, died 1586. He studied at St. Andrews and in France, and on his return to Scotland was employed in various commissions by James V., and afterwards by the Regent Arran and Mary of Guise. In 1551 he took his seat on the bench as an extraordinary lord of session. In 1560 he became blind. In 1561 he was appointed an ordinary lord of session, and assumed the title of Lord Lethington. From 1562-67 he held the office of lord privy-seal. He collected the decisions of the Court of Session from September 1550 to July 1565, and made a celebrated collection of early Scottish poetry. The Maitland Club, named after him, published a volume of his own poems in 1830.

Maitland, WILLIAM, commonly known as Secretary Lethington, a Scottish statesman, eldest son of Sir Richard Maitland, born about 1525, died 1573. He early adopted the reformed doctrines, and was one of the first public men openly to renounce the mass. In 1558 he was appointed secretary of state by Mary of Guise. In the following year he joined the Lords of the Congregation, who had taken possession of Edinburgh. In 1560 he was speaker of the parliament which abolished the authority of the pope in Scotland. On Queen Mary's arrival in Scotland he was chosen one of her principal ministers, and was continually employed as her envoy to the English court. After Darnley's murder he conspired to effect Mary's escape from Lochleven; yet he attended the coronation of James VI. and fought against her at Langside. The regent Moray, suspecting him of being at the bottom of the intrigues in favour of Mary both in England and Scotland, had him arrested in 1569 as an accessory to Darnley's murder. He was set at liberty by Kirkcaldy of Grange, and after the assassination of Moray he became the life and soul of the queen's party, and kept up an active correspondence with Mary. In 1571 he joined Kirkcaldy in Edinburgh Castle; was proclaimed a traitor by the parliament, and attainted with his two brothers. On the surrender of Edinburgh Castle Kirkcaldy and his brother were hanged, but Maitland

died in prison in Leith, presumably by his own hand.

Maize (Sp. *maiz*, from Haytian *mahiz*, the native name of the plant), Indian corn, a genus of plants commonly cultivated in the warmer parts of the world, where it answers a purpose similar to that of wheat



Maize (*Zea Mays*).

in more northern countries. The common maize or Indian corn is the *Zea Mays* of botanists, a monœcious grass, of vigorous growth, with stems not more than 2 feet high in some varieties, and reaching the height of 8 or even 10 feet in others. The grains are large, compressed, and packed closely in regular parallel rows along the sides of a receptacle many inches long. In large varieties the ear or *cob* is often 1 foot long and 2 or 3 inches in thickness. Maize is extensively cultivated in the United States, the crop reaching the vast amount of 2,000,000,000 bushels annually. Its flour, though very nourishing, is not glutinous, and is usually mixed with wheat, rye, or other flour before it is baked. In America large quantities of this grain are roasted till they split, and are then eaten under the name of *pop-corn*. From the green stems a syrup is expressed, which is fermented and converted into a kind of spirits. Paper has been made from maize fibres. It is also cultivated throughout a great part of Asia and Africa, and in several countries of the south of Europe, as Spain and Italy. The green stems and leaves form nutritious food for cattle, and in Great Britain it is sown and cut green for this purpose. *Z. Curagua*, a smaller species, is the Chili maize or Valparaiso corn.

Majesty, a title belonging to kings and queens. In England Henry VIII. first adopted the title, and at present all emperors and kings are addressed as 'your majesty.' The former kings of France were addressed as 'most Christian majesty,' the kings of Spain as 'most Catholic majesty,' the kings of Portugal as 'most faithful majesty,' the kings of Hungary as 'apostolic majesty.' The emperors of Germany and Austro-Hungary have the title of 'imperial-royal majesty.'

Majolica, or **MAIOLICA**. See *Faience*.

Major, in the army, is a field-officer next in rank above a captain and below a lieutenant-colonel. His duties are to superintend the exercises of the regiment or battalion, to carry out the orders of his superior officers, and to command in the absence of the lieutenant-colonel.

Major, in music, designates in general a larger in contradistinction to a smaller interval of the same denomination, called a *minor* interval; thus a *major tone* is the interval between two tones having the proportion to each other in number of vibrations of 8 : 9; a *minor tone* the interval between two tones in the ratio of 9 : 10; a *major third* is an interval of two tones (major and minor); a *minor third* an interval of a tone and semitone. The *major mode* is one of the two recognized modern modes (or forms of the scale), in which the first third in the scale is a major third, in contradistinction to the *minor mode*, in which the first third is a minor third.

Major, or **MAIR**, **JOHN**, Scottish theologian and historian, born about 1470, died about 1550. He was principal of Glasgow University from 1518 to 1522, and head of St. Salvator's College, St. Andrews, from 1533 till his death. Knox and Buchanan were both among his pupils. Among his works, which are in Latin, are *Commentaries on the Four Books of Sentences*, a *History of Scotland*, &c.

Major'ca (Spanish, *Mallorca*), an island in the Mediterranean belonging to Spain, the largest of the Balearic group, between Iviça and Minorca; greatest length, 58 miles; greatest breadth, 45 miles; area, 1420 square miles. It is very irregular in shape, and deeply indented. The coasts on the west and north, facing Spain, are lofty and steep; in other directions, and particularly on the east, they are low and shelving. The island is generally fertile, producing, besides large crops of cereals, hemp, flax, silk, and saffron.

Fruits abound; the pastures are rich, and maintain large numbers of cattle; and the fisheries on the coasts are valuable. It is traversed by several railways. Chief town, Palma. Pop. 230,396.

Majority, in law, is the period of full age, at which the laws of a country permit a young person to manage his own affairs. In the United States, as well as in most other countries, the age of majority is twenty-one years.

Makart, **HANS**, German painter, born at Salzburg 1840, died 1884. He studied at Vienna and Munich, and latterly settled at Vienna. He was a great colourist, but was deficient in conception and drawing. Among his chief works are: *A Trilogy of Modern Amorettes*; *The Seven Deadly Sins*; *The Dream of a Man of Pleasure*; *The Gifts of Sea and Earth*; *Leda*; and *The Entrance of Charles V. into Antwerp*.

Maki, a name applied to some of the lemurs.

Mako, or **MAKOVIA**, a town of Hungary, on the right bank of the Maros, 22 miles east by south of Szegedin. Pop. 30,063.

Makolo'lo, a large and once powerful tribe in South Africa, between lat. 13° and 20° s. They attained considerable eminence during Livingstone's time, but shortly after 1864 the kingdom was broken up.

Makri'zi, **ABU AHMAD MOHAMMED**, AL, Arabic writer, born 1360, died 1442. He wrote a *Historical and Topographical Description of Egypt*, a *History of Saladin*, a *Treatise on Moslem Coins*, &c.

Malabar', a maritime district of British India, in the presidency of Madras, on the west coast; area 5765 square miles; length 145 miles; breadth varying from 25 miles on the N. to 70 miles on the S. A great portion is comparatively low, intersected by narrow ravines, covered with forests and jungle, and watered by innumerable streams. Tea and coffee plantations have been successfully established. The principal towns are Cananor, Tellicherry, and Calicut. Pop. 2,365,035. The name Malabar is often applied to the whole extent of coast country as far north as Bombay.

Malabar Leaf, the leaf of the *Cinnamomum malabathrum* of Malabar, formerly used in European medicine.

Malabar Plum, a tree and its fruit, the *Eugenia Jambos*, natural order Myrtaceæ. It grows plentifully on the Malabar coast, and its fruit is much esteemed. Called also *Rose-apple*.

Malac'ca, a territory and town forming part of the British colony of the Straits Settlements, on the west coast of the Malay Peninsula, on the Strait of Malacca. It extends about 40 miles along the shore of the strait, and about 25 miles inland. Area 875 sq. miles. The sea-coast is rocky, and the interior in some parts mountainous, with picturesque and fertile valleys intervening. Tapioca and rice are the chief products. The district contains deposits of gold and tin. Malacca is ruled by a resident councillor subject to the governor of the Straits Settlements. The town is one of the oldest European settlements in the East, being founded by the Portuguese in 1509. It was acquired from the Dutch in 1825. Its trade and importance are now slight. Pop. of town 15,000; of the district 93,579, of whom 67,513 are Malays and 19,741 Chinese.

Malacca, STRAIT OF, the channel between the Malay Peninsula and the Island of Sumatra, extending from latitude 1° to about 6° N. Entire length, about 520 miles; breadth, varying from 25 miles to 200 miles.

Malacca Bean, the fruit of the *Semecarpus Anacardium*, or marking-nut tree of India, belonging to the natural order Anacardiaceæ. It closely resembles the cashew-nut.

Malacca Cane, a cane made from the wing-leaved, erect, slender, cane-stemmed palm *Calamus scipionum*, which, when dressed, is of a brown colour, sometimes mottled or clouded. It is brought from Singapore and Malacca, but is chiefly produced in Sumatra.

Malachi (mal'a-kī), the twelfth and last of the minor prophets. Nothing is known of the history of the writer, and it is even doubtful if Malachi (Messenger of Jehovah) be a proper name or an assumed epithet. The book evidently belongs to the latter part of the governorship of Nehemiah, about B.C. 420. It contains denunciations of the sins of the Israelites, and predicts the coming of the Messiah and the conversion of the Gentiles.

Malachite (mal'a-kit), a carbonate of copper, of a dark emerald-green colour, and of a laminated, fibrous, or massive structure. The finest specimens are obtained from Siberia, but it is found in many places all over the world. Fibrous malachite, when finely pulverized, is used as a paint; massive malachite is made into boxes, knife-handles, table-slabs, and other orna-

mental articles, and is susceptible of a beautiful polish. Blue malachite or azurite contains a larger proportion of carbonic acid.

Malacol'ogy, the science of molluscous or soft-bodied animals.

Malacop'teri, MALACOPTERYGII (-tér-ij'-i-i), a name given to those osseous fishes which are distinguished by all the rays of the fins being soft (except in a few individuals), exhibiting minute articulations, and often divided into small fibres at their extremities. They are divided into two sub-orders, the Malacopteri (proper) and the Anacanthini. They include the carp, salmon, pike, herring, cod, turbot and other flat-fish, and the eels. See *Ichthyology*.

Malacos'traca, a sub-class of crustaceans divided into two primary groups, sessile-eyed and stalk-eyed, and including the shrimps, lobsters, crabs, &c., together with the wood-lice, sandhoppers, &c.

Mal'aga, a seaport of southern Spain, in Andalusia, capital of a province of the same name, on the Mediterranean. It was anciently called *Malaca*; was a flourishing city under the Romans, and its long occupation by the Moors has left distinct marks in the older parts of the town; the Gibralfaro, or Moorish castle, on a hill overlooking the town, and considerable portions of the ancient fortifications yet remaining. Among the important buildings are the cathedral, a highly decorated structure in the composite style with a spire 300 feet high; the Episcopal palace, custom-house, and several hospitals and charitable institutions, &c. The manufactures consist chiefly of iron, the ore of which is obtained from rich mines in the vicinity; soap, cottons, linens, machinery, &c. The trade is of much more importance, the principal exports being olive-oil, lead in bars, wine, and fruit, particularly raisins, oranges, and almonds. The climate is one of the mildest and most equal in Europe. Pop. 134,016.—The province of Malaga has an area of 2822 sq. miles; pop. 518,114. It is traversed in all directions by offsets of the Sierra Nevada. The valleys are fertile and generally well cultivated, yielding cereals, grapes, oranges, lemons, figs, almonds, sugar-cane, &c.

Malaga Wine, a sweet Spanish wine produced in the province of Malaga. It is one of the 'muscatel' wines, and is rich, luscious, and full of body.

Malaguetta-pepper. See *Grains of Paradise*.

Malakoff, DUC DE. See *Pelissier*.

Malambo-bark, the bark of some species of *Galipea*, tropical American shrubs of the natural order Rutaceæ, used as a substitute for cinchona.

Mälar, MÄLAREN. See *Maelar*.

Mala'ria, air tainted by miasmata or deleterious emanations from animal or vegetable matter, especially the exhalations of marshy districts which produce fevers. A class of diseases, among which intermittent and remittent fevers occupy a prominent place, have been known from a very early period to be especially prevalent in marshy districts, where they are promoted at particular seasons by certain conditions of heat and moisture. The noxious agents by which these results are produced are known to be the product of vegetable decomposition. The decomposition of animal tissues gives rise to similar miasmata, by which such diseases are often promoted in towns, and cholera has been traced to a similar origin. The vegetable miasmata productive of malaria are most abundant in the deltas and on the banks of tropical rivers. Among the districts of Europe infected with malaria the Campagna di Roma (which see) is by far the most celebrated. The season in which malaria chiefly prevails in Europe is in autumn, after the crops are gathered.

Malatesta, a distinguished Italian family the chief branch of which were lords of Rimini from 1295 to 1526, and celebrated for the active share they took in the stirring events of that period.

Malay Archipelago, also known as the INDIAN, ASIATIC, or EASTERN, the great group of islands situated to the south-east of Asia, and washed on the west by the Indian and east by the Pacific Ocean. The archipelago may roughly be said to lie between the meridians of 95° and 135° E., and the parallels of 11° S. and 17° N. Within these limits lie some of the largest and finest islands in the world, as Borneo, Sumatra, Java, Celebes, the Philippines, &c., but New Guinea is not ranked as belonging to the group. The chief of the smaller islands are the Moluccas or Spice Islands, Billiton, Banca, Madura, Bali, Lombok, Sumbawa, Flores, Timor. The small islands may be truly called innumerable. The islands are generally fertile and covered with a luxuriant vegetation, and they produce all kinds of tropical products in abundance. Many of them contain volcanoes. As regards their fauna and flora they may be divided into

two main groups, those east of the Strait of Macassar and the channel between Bali and Lombok having more affinities with Australia, while the others are rather Asiatic in character. The chief native race is the Malayan. A large portion of the archipelago is really or nominally under the sway of Holland, and this portion is frequently called the Dutch East Indies. See separate articles on the principal islands or groups.

Malay Peninsula, the most southern part of continental Asia, the long narrow projection that stretches first S. and then S.E. from Siam and Burmah. It is connected with Lower Siam by the Isthmus of Kra, has on the E. the Gulf of Siam and the China Sea, and on the W. the Strait of Malacca. It varies in width from 45 miles at the N. to about 210 miles. The area is about 70,000 sq. miles, and the pop. is variously estimated at from 650,000 to 1,000,000, including large numbers of Chinese. The country is mountainous, with peaks of from 5000 to 9000 feet high; it is densely wooded; rivers numerous but short; minerals important, more especially tin, which is found in great quantity and largely exported. Politically the peninsula, with the exception of the British territories of Penang and Malacca, is divided among a number of more or less independent chiefs tributary to or in treaty with Siam and Britain. The native races are Siamese, Malays, and Negritos.

Malays, the name of a race of people inhabiting the Malay Peninsula, and spread over all the Asiatic Archipelago. They claim to have had their native country in the Highlands of Sumatra, where they established the once powerful state of Menangkabo, now subject to the Dutch. In physical appearance they are rather under the middle height, light-brown in colour, with black straight hair, high cheek-bones, black and slightly oblique eyes, and scanty or no beard. The civilized Malays profess the Mohammedan religion. They are said to be of a taciturn undemonstrative disposition; naturally indolent, treacherous in their alliances, and addicted to piracy. When under excitement or passion they are often seized with the 'amok' fever, when they indiscriminately cut down with great ferocity every one they meet. The Malay language is agglutinative in character, and is very extensively used as that of literature and commerce. See *Ethnology*.

Malcolm (mäl'kom) I., King of Scotland, reigned from 943 to 954.—MALCOLM II. suc-

ceeded Kenneth II. in 1005. In his reign Lothian and Strathclyde became parts of the Scottish kingdom. He was assassinated at Glamis in 1034. He was the last direct male descendant of Kenneth MacAlpine.—MALCOLM III., surnamed *Canmore* (Great Head), born about 1024. After the murder of his father, Duncan, by Macbeth, he sought aid from Siward of Northumbria, and his cause was also espoused by Edward the Confessor. On the defeat and death of Macbeth he was crowned at Scone in 1058. In 1068 he granted asylum to Edgar Atheling, his mother, and two sisters (one of whom, Margaret, he married in 1070), with a number of Saxon exiles. His reign, which was mostly taken up with wars with England, had nevertheless an important bearing on the civilization and consolidation of Scotland.—MALCOLM IV. (the Maiden) succeeded his grandfather, David I., in 1153. He surrendered Northumberland and Cumberland to Henry II. in 1157. Died at Jedburgh in 1165, at the age of twenty-four.

Malcolm, SIR JOHN, a distinguished soldier and diplomatist, was born near Langholm, in Dumfriesshire, 1769; died in London 1833. He entered in 1782, as a cadet, the service of the East India Company. In 1797 he was made captain; and from that time to 1799 he was engaged in a variety of important services, terminating at the fall of Seringapatam. He was three times ambassador to Persia, and did excellent service in the pacification of India after the wars of Holkar and the Peishwa. In 1822 he was made major-general, and received a grant of £1000 per year from the East India Company. In 1827 he was appointed governor of Bombay, which post he continued to fill until 1831, when he finally returned to Britain. He received the honour of knighthood in 1812. As an author his principal works are: *A Sketch of the Sikhs*; *The History of Persia*; *Sketches of Persia*; *A Memoir of Central India: a treatise on the Administration of British India*; and *a life of Lord Clive*.

Malden, a city of the United States, Middlesex county, Mass., 5 miles N. of Boston, on the Malden River. It has extensive manufacturing industries, and a pop. 1890, of 23,031.

Malden Island, a small island of coral formation in the Pacific; lat. 3° S., lon. 155° W. It belongs to Britain and produces guano.

Mal'dive Islands, a remarkable chain of islands in the Indian Ocean, extending from lat. 0° 40' S. to 7° 6' N., nearly on the meridian of 73° 30' E., and composed of seventeen clusters of atolls. The larger islands are richly clothed with wood, chiefly palm, and are fertile in fruit and in various kinds of edible roots; they also produce millet, and abound in cocoa-nuts, fowls, and all descriptions of fish. The inhabitants carry on a considerable trade with Bengal, Ceylon, and the Malabar coast, extending also to the Red Sea and to Sumatra. They are governed by a sultan, who resides in the island of Male or Mohl, and pays annual tribute to the British government in Ceylon. Pop. 150,000 to 200,000.

Maldon, a municipal borough and river port of England, county of Essex, 36 miles north-east of London, on the Blackwater estuary, near the mouth of the Chelmer. It has a fine old church dating from 1056. From the reign of Edward III. till 1867 the town returned two members to parliament; and one member from 1867 till 1885. Pop. 5397. It now gives name to the Maldon or Eastern parl. div. of Essex.

Malebranche (mål-bränsh), NICOLAS, a French philosopher, born in 1638, died 1715. He studied theology and philosophy at the colleges of La Marche and of the Sorbonne, and at the age of twenty-two he was admitted into the congregation of the oratory. In 1673 he published his treatise *De la Recherche de la Vérité*. The doctrines of this celebrated work are founded upon Cartesian principles. Among his other writings are *Conversations Métaphysiques et Chrétiennes*; *Traité de la Nature et de la Grace*; *Méditations Métaphysiques et Chrétiennes*; *Traité de Morale*; &c.

Male-fern, the *Nephrodium* or *Lastrea Filix-mas*, a handsome fern common throughout the temperate part of the northern hemisphere, with large fronds rising from a short erect caudex. Its rhizome and root-stalk have anthelmintic properties.

Malesherbes (mål-zerb), CHRÉTIEN GUILLAUME DE LAMOIGNONDE, French statesman, the son of Guillaume de Lamoignon, chancellor of France, was born at Paris in 1721. After studying at the Jesuits' college he qualified himself for the legal profession, and became a counsellor of the parliament of Paris. He passed through several grades of office, and was in 1750 made president of the Court of Aids. His functions were suspended by the temporary abolition of the

parliament in the reign of Louis XV., and were restored with its revival under Louis XVI. He held office along with Turgot, and resigned on his retirement. Aided by Tronchet and Desèze he acted as leading counsel for Louis XVI. Acts of loyalty far less decided were in that day the sure road to destruction. He was condemned to death, and guillotined on 22d April 1794. He was the author of a few miscellaneous treatises.

Malherbe (mâl-erb), FRANÇOIS DE, French poet, born at Caen 1555, died 1628. He was the protégé of Henry IV.; wrote light lyrics, odes, epigrams, &c.; and so far as form is concerned he may be considered the father of French classical poetry.

Malibran (mâ-lē-brän), MARIA FELICITA, one of the greatest singers of modern times, born at Paris in 1808, was daughter of a well-known singer and singing-master, Manuel Garcia. She made her début in 1825 at the opera in London, and the following year went to New York, where she married M. Malibran, a French banker, from whom she soon separated. She returned to Europe, where her splendid vocal powers and dramatic ability made her an extraordinary favourite in Britain and on the Continent. Having obtained a divorce from her first husband, she married the violinist De Bériot in 1836, but died the same year.

Malic Acid ($C_4H_6O_5$), a bibasic acid found in many fruits, particularly in the apple, hence the name, from L. *malum*. It is most easily obtained from the fruit of *Pyrus Aucuparia* (mountain-ash or rowan-tree), immediately after it has turned red, but while still unripe. It is very soluble in water, and has a pleasant acid taste.

Malice, in law, a formed design or intention of doing mischief to another, called also *malice prepense* or *aforethought*. It is *express* when the formed design is evidenced by certain circumstances discovering such intention; and *implied* when the act is done in such a deliberate manner that the law presumes malice, though no particular enmity can be proved. *Malicious mischief* is the committing of an injury to public or private property from sheer wantonness or malice. This offence is punishable with great severity. Intent is the material ingredient in offences of this nature; but as the law presumes malice in the very commission of the act, it lies on the party indicted to rebut the presumption of malice, or sufficiently explain the act. A *malicious*

prosecution is a prosecution brought against a person maliciously and without reasonable cause. From the mere want of probable cause malice may be inferred.

Malig'nants, in English history, a name applied by the parliamentary party during the civil war to describe the king's evil advisers; the name came to be afterwards given to all who supported the king against the parliament.

Malines (mâ-lēn). See *Mechlin*.

Mallanwan, an Indian town, Hardoi district, Oudh, 21 miles s. of Hardoi. Pop. 10,970.

Mallard. See *Duck*.

Malleability, the property of being susceptible of extension by beating; almost restricted to metals. The following is the order of malleability of the metals:—Gold, silver, copper, platinum, iron, aluminium, tin, zinc, lead, cadmium, nickel, cobalt. Ductility and malleability are nearly allied, but they are seldom possessed in the same proportion by the same metal.

Mal'leus, one of the bones of the ear. See *Ear*.

Mallock, WILLIAM HURRELL, born in Devonshire 1849, his mother being a sister of Froude the historian, was educated privately and at Balliol College, Oxford, where he gained the Newdigate for a poem on the Isthmus of Suez. He is a frequent writer on political and social subjects in the magazines, and has published *The New Republic*; *The New Paul and Virginia*; *Is Life Worth Living*; *A Romance of the Nineteenth Century*; *The Old Order Changes*, a novel; &c.

Mallow (*Malva*), a genus of plants of the natural order Malvaceæ. *M. sylvestris* (the common mallow) is a common and widely diffused species, possessed of mucilaginous properties. The whole plant is used officially in Britain in fomentations, cataplasms, and emollient enemas. When fresh the flowers are reddish-purple, but on drying become blue, and yield their colouring principle both to water and alcohol. The alcoholic tincture furnishes one of the most delicate of reagents for testing the pre-



Common Mallow (*Malva sylvestris*).

sence of alkalies or acids. The dwarf mallow (*M. rotundifolia*) is also a native of Britain. Its stems are short, simple, spreading widely around, rising from a long, deeply buried root. Its leaves are of a handsome, round, heart-shaped form, somewhat lobed and crenate on their edges; the flowers white, violet white, or purplish. The musk mallow (*M. moschata*) is also found in Britain; it has handsome deeply-cut leaves, which diffuse a pleasant musky odour, and large rose-coloured flowers. The fibre of *M. crispa* is sufficiently tenacious to be used in making cordage. Mallow is naturalized in the U.S.

Mallow, a town of Ireland, county Cork, 18 miles north by west of Cork, on the Blackwater. It was a parliamentary borough till 1885. Pop. 4439.

Malmaison, a historic chateau in France, department of the Seine, 5 miles w. of Paris, once the property of Richelieu. It was the favourite residence of the Empress Josephine, wife of Napoleon I.

Mal'medy, a town of Rhenish Prussia, about 24 miles south of Aix-la-Chapelle, on the Warche in a basin surrounded by hills; manufactures of sole-leather, paper, &c. Pop. 6078.

Malmesbury (māmz'be-ri), a town of England, county of Wilts, on an eminence, 23 miles N.E. of Bristol. It is well built, and has the remains of an abbey founded in the 6th century. It was a parliamentary borough till 1885. Pop. 6881.

Malmesbury, JAMES HARRIS, EARL OF, son of James Harris, the author of *Hermes*, born 1746, died 1820. His diplomatic career, dating from 1768, was a brilliant success, and earned him the reward of an earldom in 1800. His *Diaries and Correspondence* were published in 1844, his *Letters* in 1870. —His grandson, JAMES HOWARD, third earl, born 1807, has been foreign secretary and keeper of the privy seal. He published *Memoirs of an Ex-Minister* in 1884.

Malmesbury, WILLIAM OF, an English historian, born probably in Somersetshire about the year 1075, died about 1143. He received his education at the Benedictine Abbey of Malmesbury, and subsequently became librarian and precentor of the abbey. His *De Gestis Regum Anglorum* is a general history of England, from the arrival of the Saxons in 449 to 1128; he also wrote a history from that year to 1143; *De Gestis Pontificum Anglorum*: *Antiquities of Glastonbury*; &c. All his works are highly esteemed as trustworthy chronicles.

Malmö (mål'meu), a seaport of Sweden, capital of the laen or prefecture of Malmöhus, situated on the eastern shore of the Sound, opposite Copenhagen. The manufactures and other industries are considerable, and the shipping trade of the port is large. Pop. 45,143. —The laen of MALMÖHUS is very fertile; has an area of 1781 sq. miles; pop. 364,543.

Malmsey Wine is a sweet wine obtained from a grape originally brought from Malvasia or Malvoisie in the Morea. It is made in the Azores, the Lipari Islands, Teneriffe, Sardinia, Sicily, but more especially in Madeira, from grapes that have been allowed to shrivel on the vine.

Malo, ST., a fortified seaport of north-west France, department of Ille-et-Vilaine, on a rocky island communicating with the mainland by a long causeway. It has a commodious and secure harbour formed by the mouth of the Rance, the island, and causeway, and the trade and manufactures are important. Pop. 10,500.

Malone, EDMUND, a commentator and editor of Shakspeare, was born at Dublin in 1741, died 1812. He was called to the London bar in 1767, but devoted himself entirely to literary pursuits. He published an edition of Shakspeare with suggestive notes in 1790; *Remarks on the Rowley (Chatterton) Controversy*; an *Inquiry into the Ireland Shaksperian forgeries*; biographical memoirs of Sir Joshua Reynolds, Dryden, W. Gerard Hamilton, &c.

Mal'ory, SIR THOMAS, born probably about 1430. His compilation, *The Most Ancient and Famous History of the Renowned Prince Arthur*, based on the romances of Merlin, Lancelot, Tristram, the Quest of the Graal, and the Mort d'Arthur, was first printed by Caxton in 1485. Malory is supposed to have been a Welshman, but all that is known of him is that he was a knight, and finished the book about 1470.

Malpighi (mål-pē'gē), MARCELLO, Italian physician and anatomist, born in 1628, died in 1694. He was successively professor of medicine at Bologna, Pisa, and Messina. In 1691 he became physician to Pope Innocent XII. His works relate to anatomy, physiology, and vegetable anatomy.

Malpighia (mal-pig'i-a), named after Marcello Malpighi, a genus of plants, the type of the nat. order Malpighiaceæ. The species are small trees or shrubs, with opposite shortly-stalked leaves and axillary and terminal fascicles or corymbs of white or

red flowers. The fruit of one species (*Malpighia urens*) is the Barbadoes cherry of the West Indies.

Malpighian Bodies and Corpuscles, in anatomy, certain small round bodies in the cortical substance of the kidney and in the spleen. See *Kidney* and *Spleen*.

Malplaquet (mål-plâ-kā), a village in the French department of Nord, on the Belgian frontier, 26 miles S.E. of Valenciennes, celebrated for the defeat of the French under Villars by the allied British and Austrian troops under Marlborough and Prince Eugene, Sept. 11, 1709.

Malt, grain, usually barley, steeped in water and made to germinate, the starch of the grain being thus converted into saccharine matter, after which it is dried in a kiln, and then used in the brewing of porter, ale, or beer, and in whisky distilling. One hundred parts of barley yield about ninety-two parts of air-dried malt. See *Brewing*.

Malta (anciently *Melita*), an island in the Mediterranean belonging to Britain, 62 miles S.S.W. of Sicily, and 197 miles N. of Africa; length, north-west to south-east, 17 miles; central breadth, about 9 miles; area, 98 square miles, to which the adjoining islands of Gozo and Comino add 24. It is of an irregular oval shape, deeply indented on all sides except the south, where the coast forms a continuous and almost unbroken line. The most important indentation is the double bay on which the capital, Valetta, stands. The greatest elevation of the island is about 750 feet. There are only a few small streams, but the springs are so numerous and copious that no deficiency of water is felt. An extensive series of water-works, including reservoirs for irrigation, have recently been constructed. The soil is thin, and rests on a calcareous rock; in some parts earth has been brought from Sicily and put down. Corn, cotton, potatoes, and clover are the chief crops. Both the vine and olive are cultivated, and fruit, particularly figs and oranges, is very abundant. The manufactures consist of cotton goods, lace, jewelry, &c. The central position of Malta in the Mediterranean makes Valetta an invaluable naval station. It has,

in consequence, been provided with excellent docks and very strong fortifications. The climate is very hot in summer, but pleasant and healthy in winter, attracting many visitors at this season. Malta passed successively through the hands of the Phœnicians, Greeks, and Carthaginians, and was finally attached to Rome during the second Punic war. After the fall of the Roman Empire it was seized at different times by Vandals, Goths, and Saracens. From the last it passed to Sicily, and followed its fortunes till 1522, when Charles V. granted it to the order of St. John of Jerusalem. In 1798 the grand-master surrendered it without defence to Napoleon. It was taken by the British in 1800, and finally annexed by them in 1814. The executive government is in the hands of a governor and council. By a new constitution adopted in 1888 the legislative council consists of the governor and the members of council (6), with 14 members elected by the constituencies into which Malta and the islands of Gozo and Comino have been divided. The



people are mainly of Arabic race and speak a kind of Arabic mixed with Italian. Italian and English are also spoken. The educational institutions include a university, a lyceum, two secondary schools, besides primary and infant schools. Besides the capital Valetta and the Three Cities adjoining there are several considerable towns or

villages. The total pop., inclusive of the garrison (about 5000), 1890, 165,662.

Malte-Brun (mält-brùn), geographer, properly **MALTHE KONRAD BRUN**, born at Thisted, Jutland, 1775; died at Paris 1826. His liberal political opinions caused his banishment from Denmark, and he became a French citizen about 1800. His geographical works include: *Géographie Mathématique, Physique et Politique*; *Tableau de la Pologne*; *Précis de la Géographie Universelle*; &c.

Maltese Cross. See *Cross*.

Maltese Dog, a very small kind of spaniel, with long silky, generally white hair and round muzzle. They are lively and good-tempered, and make agreeable pets.

Maltha, a variety of bitumen, viscid and tenacious, like pitch. It is unctuous to the touch, and exhales a bituminous odour.

Malthus, **REV. THOMAS ROBERT**, English political economist, born 1766; died 1834. He studied at Jesus College, Cambridge, became fellow of his college, took orders and held a small living in Surrey. In 1805 he was appointed professor of history and political economy in the East India Company's College at Haileybury, an office which he held till his death. In 1798 he first published the views with which his name is associated in his *Essay on the Principles of Population as it Affects the Future Improvement of Society*. It was improved and matured in subsequent editions. His leading principle is that population, when unchecked, goes on increasing in a higher ratio than the means of subsistence can, under the most favourable circumstances, be made to increase; that the great natural checks to excessive increase of population are vice, misery, and moral restraint; and the great business of the enlightened legislator is to diminish the first two and give every encouragement to the last. Besides the *Essay* Malthus wrote various pamphlets and works of temporary interest.

Malton, a town of England, county of York, 16 miles north-east of the city of that name, on the right bank of the Derwent. There are some large breweries, and also foundries, agricultural implement works, &c. Till 1885 it returned a member to parliament. Pop. 8751.

Malva. See *Mallow*.

Malva'ceæ, the mallows, a large natural order of exogenous plants, having polypetalous flowers, monadelphous stamens, unilocular anthers, valvate aestivation, and often an

external calyx (epicalyx) or involucre. A large proportion of the order consists of herbaceous or annual plants, inhabiting all the milder parts of the world, but found most plentifully in hot countries. Several species are of essential service to man. As emollients they are well known in medical practice. The hairy covering of the seeds of the various species of *Gossypium* forms raw cotton. The inner bark of many species yields fibre of considerable value. Many species of *Althæa*, *Sida*, and *Hibiscus* are splendid flowering plants. See *Mallow*.

Malva'sia, the Italian *Napoli di Malvasia*, a great fortress and commercial centre of the Levant during the middle ages; now a small town with about 1000 inhabitants on the eastern shore of the Morea.

Malvern, GREAT, a fashionable watering-place and health-resort of England, county of Worcester, 8 miles s.w. of the city of Worcester, on the eastern slope of the Malvern Hills. It is irregularly built, but is surrounded by beautiful villas and handsome mansions, and has large and handsome hydropathic establishments, a fine church, &c. Malvern College is a flourishing proprietary institution on the plan of the great public schools. Pop. 1891, 6107.

Malvern Hills, a range of England, on the borders of Worcester and Hereford shires. It extends north and south for about 9 miles, and attains an altitude of 1395 feet.

Malwah', an old province of Central India, presidency of Bengal; now included in Bhopál, Gwalior, Indor, &c.

Malwan', a town of India, Bombay, on an island off the coast, 210 miles s. of Bombay. Pop. 15,565.

Mam'elukes, or **MAMALUKES** (Arabic, 'slaves'), the former mounted soldiery of Egypt, consisting originally of Circassian slaves. As early as 1254 they became so powerful that they made one of their own number sultan, this dynasty continuing till 1517, when it was overthrown by Selim I. They still continued to be virtual masters of the country, however. They suffered severely in opposing the French at the end of the 18th century, and in 1811 Mehemet Ali caused a general massacre of them throughout Egypt.

Mamma'lia (Latin, *mamma*, a breast), the highest class at once of the Vertebrata and of the animal kingdom, including those warm-blooded animals we familiarly term 'quadrupeds,' the whales and other fish-like forms, and man himself. Their distinctive

characteristic is that the female suckles the young on a secretion peculiar to the class, furnished by the mammary glands of the mother, and known as milk. The skin is always more or less covered with hairs, which are found in many forms, from the finest wool or silky down to large coarse bristles and even spines. The skeleton exhibits a uniformity of essential structure, and in most points agrees with that of man. The cavity of the thorax or chest is bounded by the ribs, which vary greatly in number, but generally correspond to that of the dorsal vertebræ. The skull forms a single piece composed of bones immovably fastened together, to which is articulated the lower jaw, composed of two halves united at the chin. The skull is joined to the spine by means of two condyles which fit into the first cervical vertebra. The limbs, like those of all other Vertebrata, are never more than four. The front limbs are invariably present, but in cetaceans and such allied forms as the dugongs and manatees the hinder limbs are either completely suppressed or present only in a rudimentary state. The limbs are generally well developed, and are most commonly adapted for terrestrial progression; some are suited for burrowing, others for climbing, those of the cetaceans and seals for swimming, while some (the bats) have the fore limbs developed into a kind of wing. Teeth are present in most mammals; but they are only represented in the embryo in the whale-bone whales, and are entirely absent in the anteater, pangolin, and echidna. The teeth are lodged in *alveoli* or sockets, and are not ossified to the jaw-bones as in lower forms. Mammals which have only a single set of teeth throughout life are termed *monophyodont*; those who have the first set of teeth (milk or deciduous teeth) replaced by a second set of permanent teeth are called *diphyodont*. The teeth are referable to four groups, which differ in form, position, and function: *incisors*, *canines*, *premolars*, and *molars*. The chest or thorax in all mammals is separated from the abdominal cavity by a complete *diaphragm* or 'midriff,' which thus constitutes a great muscular partition between these cavities, and also forms the most important agent in effecting the movements of the chest during respiration. Within the thorax the heart and lungs are contained; whilst the abdomen and its lesser pelvic cavity contain the organs relating generally to digestion, ex-

cretion, and reproduction. The stomach, generally simple, may, as in some monkeys, in the kangaroos, in the pig, and most of all in the ruminants, exhibit a division into compartments. A liver and pancreas are present in all Mammalia. The lungs agree in essential structure with those of man, as also does the heart with its four chambers—right and left auricles and right and left ventricles. The red corpuscles of the blood are *non-nucleated*, and are circular in shape except in the case of the camels. All mammals with the exception of the monotremes are viviparous, but there are considerable differences in the relations subsisting between mother and young before birth, thus leading to the division into placental and aplacental mammals. (See *Placenta*.) Man and all other mammals except the monotremes and marsupials belong to the latter division. All mammals possess mammary or milk glands, which, however, may differ chiefly in number and position throughout the class. (See *Mammary Glands*.) In the *classification* of this important group authorities differ somewhat, but the mammals may be divided into the following groups:—Man (*Hominidæ*); Apes and Monkeys (*Simiæ*); the Prosimians or Lemurs (*Prosimii*); the Bats (*Chiroptera*); the Insect-eaters (*Insectivora*); the Flesh-eaters (*Carnivora*); the Seals (*Pinnipedia*); the Whales and Dolphins (*Cetacea*); the Sea-cows (*Sirenia*); the Elephants (*Proboscidea*); the Odd-toed Ungulates (*Perissodactyla*); the Even-toed Ungulates (*Artiodactyla*); the Gnawers or Rodents (*Rodentia*); the Edentates (*Edentata*); the Marsupials, or Pouch-bearing Mammals (*Marsupialia*); and the Monotremes (*Monotremata*).

Mammary Glands, the milk-producing organs, the distinctive mark of the mammals. These structures present in man an essentially *lobular* structure. The lobes are divisible into smaller *lobules*, which consist ultimately of groups of vesicles which open into minute ducts converging into larger channels which lead to the milk reservoirs at the nipple. The nipple itself is composed of unstriped muscular fibres and areolar tissue. It also possesses erectile powers, and blood-vessels are in consequence freely distributed to it. These glands, save in exceptional instances, are undeveloped in the male. They are always in pairs on some part of the ventral surface of the body, but in number and position they vary much in the various groups.

Mammee'-tree, or WEST INDIA APRICOT (*Mammēa americana*), nat. order Guttiferæ, a tall handsome tree bearing a fruit about the size of a cocoa-nut. This has two rinds inclosing the pulp, which is firm, bright yellow, and has a pleasant taste and smell. The seeds, which are large, are used as anthelmintics, and a gum distilled from the bark is used to destroy chigoes.

Mammon, a Syriac word used in St. Matthew as a personation of riches or worldliness. There does not appear to have been any idol in the East receiving divine honours under this name.

Mammoth, a species of extinct elephant, the fossil remains of which are found in European, Asiatic, and North American formations. Geologically speaking, the mammoth, or *Elephas primigenius*, dates from the Post-pliocene period. It survived the glacial period, and lived into the earlier portion of the human period; its remains having been frequently found associated with human remains, and its figure carved on bone. It appears to have been widely distributed over the northern hemisphere, but never south of a line drawn through the Pyrenees, the Alps, the northern shores of the Caspian, Lake Baikal, Kamtchatka, and the Stanovoi Mountains. It had large curved tusks, and shaggy hair. The bones and tusks have been found in great abundance in Siberia; and an entire carcass which had been preserved in the ice and latterly thawed out, was discovered towards the close of last century on the banks of the river Lena, in such a perfect state that the flesh was eaten by dogs, wolves, and bears. Its skin was perfectly preserved, and was seen to be clothed with a furry wool of reddish colour, interspersed with black hairs. The skeleton and other parts of this animal are preserved in the St. Petersburg Royal Museum. It must have been twice as bulky as the elephants at present living.

Mammoth Cave, a stupendous cave in Kentucky, near Green River, about 80 miles s.s.w. of Louisville. It is one of a large series of vast caverns here formed in the limestone rock, and which are found over an area of 6000 miles in Kentucky, Tennessee, and Indiana. It has been penetrated 14 miles, and has many windings and offshoots, some of them but imperfectly explored. It is a dry cave, and the remains of its stalactite and stalagmite formations are dusty and dilapidated; consequently it is more remarkable for its extent, the size of its halls, and height

of its domes, than for the variety or beauty of its scenery. It contains several small lakes or rivers, the largest, Echo River, being more than half a mile long. It rises and falls according as Green River is in flood or otherwise, there being an underground connection between them. The animals of the cave include blind wingless grasshoppers, beetles, rats, &c., and the viviparous blind fish *Amblyopsis*.

Mammoth Trees. See *Sequoia*.

Man, the most highly organized member of the animal world. The endeavour has often been made in classification to separate man from the brute creation. One system, expressing a vast gap between the Quadrumana and man, classifies man in the order Bimana ('two-handed'), the highest division of the Mammalian class; and relegates the monkeys and apes to the lower and distinct order—that of the Quadrumana ('four-handed'). The more recent arrangements, however, classify man and the monkeys in one order, making man the highest family or group of this order. From the purely anatomical point of view the differences which separate the anthropoid apes from man are in some respects less than those which separate these higher apes from apes lower in the scale. But the mental or psychical endowments of man oblige us to remove him far above the highest Quadrumana; and even the characters by which he is anatomically separated from the highest apes form a very distinct and appreciable series. The first grand characteristic of man is his *erect position* and bipedal progression. The lower limbs, with the feet broad and plantigrade and the well-developed heel, are devoted exclusively to progression and supporting the weight of the body; while the upper limbs have nothing to do with progression, but subserve prehension entirely. The bones of the face in man do not project forwards, whilst they are elongated in a downward direction; and the face and forehead are in the more civilized races situated nearly in the same plane, so that the face immediately underlies the brain. Similarly the development of a distinct chin is also a peculiarly human feature, and one which in the highest varieties of mankind becomes most marked. The great *cranial* capacity of man, or the greater size of the cranial or brain portion as compared with the facial portion of the skull, forms another noteworthy and distinctive character of the human form. The brain con-

volutions also are more numerous and complex than is the case with any other mammal. The teeth of man are arranged in a continuous series, and without any *diastēma* or interval. The development of hair too is very partial. The gorilla presents of all the apes the nearest approach to the human type taken in its entirety; but it differs in the relative number of vertebræ (13 dorsal and 4 lumbar, to 12 and 5 respectively in man), in the order of dental succession and in the presence of the interval or diastema, in the less prominent muscular development of the buttocks and calves, and in other minor differences. The orangs most closely approach man's structure in the number of ribs and in the form of the cerebrum, whilst they exhibit the greatest differences from him in the relative length of the limbs. The chimpanzees are most anthropoid in the shape of the cranium, in the arrangement and succession of the teeth, and in the length of the arms as compared with that of the legs. Of the higher apes the gibbons are those furthest removed from the human type of structure. Chief among the psychical features, or rather among the results of the operation of the principle of *mind*, we note the possession of the moral *sense of right and wrong*. The possession of an articulate language, by which he can communicate his thoughts, is also the exclusive possession of man, and draws a sharp line of separation between him and all other animals. With regard to the geological history of man, the earliest traces yet discovered belong to the Post-pliocene deposits in conjunction with existing species of shells and some extinct species of mammals. Man's advent upon the earth is consequently referred to a period much anterior to that which former limits and theological ideas prescribed. Among the modern theories regarding the origin of man may be noted those of (1) Darwin; that man is directly descended from an extinct form of anthropoid ape, with a tail and pointed ears, arboreal in its habits and an inhabitant of the Old World; further, that man has diverged into different races or sub-species, but that all the races agree in so many unimportant details of structure, and in so many mental peculiarities, that they can be accounted for only through inheritance from a common progenitor. (2) Wallace also affirms the original unity of man, and places him apart as not only the head and culminating point

of the grand series of organic nature, but as, in some degree, a new and distinct order of being; maintaining that a superior intelligence has guided the development of man in a definite direction and for a special purpose, just as man guides the development of many animal and vegetable forms. (3) Carl Vogt holds a plurality of the race; adopts Darwin's idea of natural selection accounting for the origin and endowments of man, but rejects Wallace's idea of the higher controlling intelligence. (4) Mivart propounds a theory of a natural evolution of man as to his body, combined with a supernatural creation as to his soul. See also *Ethnology, Anthropology, Anthropometry, &c.*

Man, ISLE OF, an island in the Irish Sea, equidistant about 27 miles from England and Ireland, and 16 miles from Scotland; greatest length, N.E. to S.W., 33 miles, greatest breadth, E. to W., 12 miles; area, 145,325 acres, of which about two-thirds are under cultivation. There is a small island, the Calf of Man (800 acres), at the S.W. extremity of Man. The scenery is pleasing but rather tame. A range of hills extends throughout nearly the entire length of the island, culminating in Snaefell (2024 feet). Lead and zinc are found in considerable quantities, especially the former. Fishing is an important industry, but the manufactures are almost entirely domestic. The island is governed by an independent legislature called the Tynwald, consisting of two branches—the Governor and Council and the House of Keys. Two judges or 'deemsters' try civil and criminal cases. Since 1866 the insular exchequer has received the whole surplus customs revenue after the payment of all expenses of government, and £10,000 a year contribution towards the imperial exchequer. It likewise receives from various sources, including royalties and minerals, upwards of £12,000 a year. The Manx language, a Celtic dialect, is still in use, although all the inhabitants speak English. The principal towns are Douglas, Castletown, Peel, and Ramsey. This island was taken by the Norwegians in 1098, sold to the Scots in 1266, and was repeatedly occupied by the English and Scots up till 1344, when it remained in possession of the former. It was latterly held as a feudal sovereignty by the earls of Derby, and more recently by the dukes of Athole, from whom it was purchased for the British crown in 1764 for £70,000; and finally, in 1829,

certain remaining privileges were ceded by the duke on receiving an award of £416,000. Pop. 1891, 55,598.

Manaar', GULF OF, a part of the Indian Ocean between Ceylon and Hindustan, separated from Palk's Strait by a reef called Adam's Bridge, which runs between the two islands of Manaar (18 miles by $2\frac{1}{2}$ miles) and Ramisseram. The gulf is noted for its pearl-fisheries.

Manacor', a town of Spain, in the island of Majorca. Pop. 14,929.

Mana'gua, a town in Central America, capital of the state of Nicaragua, near the south-west shore of the lake of same name, 32 miles s.s.w. of Leon. Pop. about 18,000. —The lake, about 38 miles long and 16 broad, discharges itself into that of Nicaragua.

Man'akin, the name given to the denti-rostral insessorial birds forming the sub-family Piprinæ. They are generally small and of brilliant plumage, and are mostly confined to South America, a few species being found in Central America and Mexico. The typical genus is *Pipra*, which includes the bearded manakin (*P. Manacus*), and several others. An allied species is the beautiful orange manakin or cock-of-the-rock (*Rupicola aurantia*).

Manantava'di, a town of Hindustan, Malabar district, Madras presidency; centre of the important Wynaad coffee district. Pop. 8989.

Mana'os, a town of Brazil, capital of prov. Amazonas. Pop. 6000.

Ma'nasarowara, a lake of Tibet, north of the main chain of the Himālaya Mountains, about lat. $30^{\circ} 8' N.$, lon. $81^{\circ} 53' E.$ It is almost circular in form, about 15 miles in diameter, and is drained by the Sntlej.

Manas'seh, (1) eldest son of Joseph, born in Egypt. His descendants formed a tribe, which, in the Promised Land, was settled half east of the Jordan and half to the west of this river. (2) King of Judah, son of Hezekiah, whom he succeeded at twelve years of age, 697 B.C. He became an open idolater; was taken captive to Babylon; ultimately repented and was restored to his kingdom. He reigned for fifty-five years.

Manatee', the sea-cow or lamantin, a gregarious aquatic mammal of the genus *Manatus*, order Sirenia, found on the coasts of South America, Africa, and Australia. They generally frequent the mouths of rivers and estuaries, and feed on algæ and such littoral land vegetation as they can reach at

high tide. Their anterior limbs or swimming paws are furnished with nails, by means of which they drag themselves along the shore. They are large awkward animals, attaining a length of 8 to 10 feet as a rule, but sometimes growing to 20 feet. The skin is



American Manatee (*Manatus americanus*).

of a grayish colour, sparsely covered with hairs. Their flesh is excellent, and they furnish a soft, clear oil which does not become rancid. There are several species, the principal being the American manatee (*M. americanus*), which inhabits the shallow waters of the east coasts of South and North America, and the African manatee (*M. senegalensis*). The dugong (which see) belongs to the same order.

Manby, CAPTAIN GEORGE WILLIAM, born in Norfolk 1765, died 1854. About 1808 he invented the apparatus known by his name for saving life from shipwrecked vessels near the coast, and was rewarded with about £7000. See *Life-rockets*.

Mancha, LA, an ancient province of Spain, in New Castile, forming the chief part of the modern province of Ciudad-Real; famous as the scene of Don Quixote's adventures.

Manche (mänsh), LA, a department of Northern France, bounded on the w., n., and n.e. by the English Channel, and landward by the departments of Calvados, Orne, and Mayenne. It is about 80 miles long by 30 broad, and has an area of 2263 sq. miles. Pop. 1891, 513,815.

Manchester, Hartford co., Conn., has extensive manuf. of book, government, and bank-note paper, woollens and gingham. The Cheney silk works are among the largest in the United States. Pop. 1890, 8222.

Manchester, Chesterfield co., Va., on James river, op. Richmond, is the seat of important manufactories. Pop. 1890, 9246.

Man'chester, a municipal and parliamentary borough and city of Lancashire, England, 188 miles N.N.W. from London by railway, and 32 miles east by north of Liverpool. The old town of Manchester proper, and

MANCHESTER.

the large and populous townships of Hulme, Chorlton, Ardwick, Cheetham, &c., are situated on the east or left bank of the Irwell, whilst the extensive borough of Salford is situated on the right bank; but communication by a dozen bridges serves to make them practically one city. Manchester charter of incorporation dates from 1838; in 1832 it was made a parliamentary borough, and in 1852 it became a city. It has many important and handsome public buildings

and many fine streets. The centre of the town is largely occupied by immense piles of warehouses and offices, while the factories and other manufacturing works are chiefly in the outskirts. Among the chief public buildings are the town-hall or municipal buildings in the Gothic style, finished in 1877 at a cost of £1,053,264; the Assize Courts, also a fine specimen of modern Gothic, behind them being a well-arranged prison; the Royal Exchange; the Royal In-



Manchester—The Royal Infirmary and Piccadilly, from the Queen's Hotel.

firm; the old town-hall, in which the Free Reference Library is now located; the Free Trade Hall, used for public meetings; the Royal Institution, &c. Among the churches the first place is due to the cathedral, a fine specimen of Perpendicular Gothic, built in 1422; but the soft stone of which it is built having necessitated numerous repairs, the edifice has a comparatively new appearance. The chief educational institution is Owens College, the nucleus of the Victoria University, founded in 1846 by a bequest of upwards of £100,000 from John Owens. (See *Owens College*.) Cheetham's Hospital was founded under the will of Humfrey Cheetham in 1653 for the education of poor boys. Attached to the institution is a library of nearly 40,000 vols., the first free library in Europe. The city has also a number of denominational colleges—the Lancashire Independent College, the Primitive Methodist College, St. Bede's Roman Catholic College, &c. The Grammar School was founded in

1520, and has exhibitions at Oxford or Cambridge. There are numerous literary, scientific, and philosophical societies, some of them of considerable standing. The Free Library, established in 1851, has a reference library in the main building of 85,000 vols., and six branches with upwards of 100,000 vols. Benevolent and charitable institutions are numerous. For open-air recreation there are the botanical and horticultural garden; the Queen's, Alexandra, and Philip's parks; the Belle Vue zoological gardens; and Peel Park, Salford, with an excellent museum, and covering an area of 40 acres. Among the public monuments the most noteworthy is the Albert Memorial in front of the town-hall. The chief manufacture is cotton, though woollen and silk fabrics are also produced. Metal manufactures, engineering, and the making of all kinds of machinery employ many hands. Railway communication is of the most extensive kind, the largest stations being Victoria, London Road, Ex-

change, and Central. The commerce of the town will be further facilitated and extended on the completion of the ship canal, connecting it with the Mersey estuary, now in course of construction. It will be about 21 miles long, and will have several locks; there is to be a dock of 25 acres at Salford. The manufacture of gas, supply of water, working of trainways, &c., are directly or indirectly in the hands of the corporation, and an extensive scheme is being proceeded with for bringing an improved water supply from Thirlmere in the Lake District.—Manchester is the *Mancunium* of the Romans. Its history is legendary down to the 10th century, when it was devastated by the Danes. In the 12th century the woollen manufactures began to develop, and in 1301 it received municipal liberties and privileges. During the civil war the town suffered much at the hands of both parties. The introduction of machinery in cotton-spinning towards the end of the 18th century gave power and direction to the trade of modern Manchester, and its progress since has been extraordinarily rapid. A temporary check resulted from the civil war in America, which led to a cotton famine in 1862, causing the deepest distress in South Lancashire. Manchester now returns six members to parliament, while Salford has three members. Pop. of Manchester, 1891, 505,343; of Salford, 1891, 198,136.

Manchester, a town in the United States, New Hampshire, on the Merrimack, at the Amoskeag Falls, 59 miles north-north-west of Boston. It is one of the chief manufacturing places in New England, having the advantage of an unlimited supply of water-power from the falls of the Merrimack. The chief articles manufactured are cottons, woollens, fire-engines, locomotives, edge-tools, castings, and paper. Pop. 44,126.

Manchester New College, an English institution established in 1786 at Manchester, subsequently removed to York, then back to Manchester, next up to London, and in 1889 to Oxford. Its main object is the teaching of theology apart from the doctrines of any particular sect.

Manchester Party or School, the name given to an English political party whose exertions were particularly directed to the development and thorough carrying out of the principles of free-trade. They had their chief seat in Manchester, and Messrs. Cobden and Bright were the principal leaders. From their advocating non-intervention in

foreign affairs, of arbitration instead of war, &c., they were sometimes called the 'peace-at-any-price' party.

Man'chineel, a lofty tree (*Hippomane Mancinella*) belonging to the natural order Euphorbiaceæ. It is a native of the West India Islands and Central America, and is valuable for cabinet work. It possesses poisonous properties, which, however, have been greatly exaggerated. The milky juice when dropped upon the skin produces a sensation of severe burning, followed by a blister.

Manchu'ria, or MANCHOORIA (Chinese *Shing-King*), a Chinese territory occupying the north-eastern corner of the empire. It is bounded on the north and east by the Amur or Amoor and Usuri, which separate it from the Russian territory; on the west by the provinces of Irkutsk, Mongolia, and Chih-le; on the south by the Gulf of Leaotong, the Yellow Sea, and Corea. It is divided into three provinces, Shing-King, Feng-Tien, or Leaotong in the south, of which Mukden is the capital; Kirin in the centre, with a capital of the same name; and He-Lung-Kiang in the north, with capital Tsitsihar. The total area is about 380,000 sq. miles. The administration is military, the governors of the two northern provinces being subordinate to the governor of Mukden. The Manchus are a hardy race, and their country has long been the great recruiting ground for the Chinese army; but of late years vast numbers of Chinese proper have flocked into it, so that now they by far outnumber the native race. In the 17th century the Manchus invaded China and placed their leader's son upon the throne. Since that time the Manchu dynasty has continued to reign in China, and the Manchu language has become the court and official language. The country is mountainous, but on the whole fertile. The climate is good, for though the winters are severe they are healthy and bracing. The vast forests of the north are rich in useful timber of all kinds. The principal food crops are pulse, millet, barley, and wheat. The vine, indigo, cotton, opium, tobacco, &c., are cultivated. The chief seaport is the treaty port Newchwang. Pop. estimated at 22,000,000.

Manchus, or MANCHOOS. See preceding article.

Man'daites. See *Christians of St. John*.

Man'dalay, the capital of Burmah from 1860 to its annexation by India in 1886. It is situated in a level plain about 2 miles

from the left bank of the Irrawaddy. It consists of four concentric quadrangles, of which under native rule the innermost contained the palace, &c.; the second, which was surrounded by a moat and walls, contained the houses of the government officials, soldiers, &c.; while outside dwelt the general body of the people. Since the British occupation the town has suffered severely from fires and floods. Pop. 1891, 187,910.

Manda'mus, in law, a command or writ issuing from a superior court, directed to any person, corporation, or inferior court, requiring them to do some act therein specified which appertains to their office and duty, as to admit a person to an office or franchise, or to deliver papers, &c.

Man'darin, the term applied by Europeans to government officials of every grade in China. The Chinese equivalent is *kwan*, which signifies literally a public character.

Mandarin Duck, a beautiful species of duck (*Anas* or *Dendronessa galericulata*) from Eastern Asia, the males of which exhibit a highly variegated plumage of green, purple, white, and chestnut, the females being coloured a more sober brown. The male loses his fine plumage in summer.

Mandats (mān-dà), a kind of paper-money issued during the French revolution, differing from the *assignats* (which see) in so far as specific pieces of property, enumerated in a table, were pledged for the redemption of the bills, whilst the *assignats* furnished only a *general* claim.

Man'davi. See *Mandvi*.

Mandelay. See *Mandalay*.

Man'deville, BERNARD, poet and philosophical writer, born in Holland about 1670, died in 1733. His most celebrated production is the *Fable of the Bees*, or *Private Vices Public Benefits*, the first part of which appeared in 1723, and the second in 1728. It created quite a sensation, and called forth replies from Bishop Berkeley, William Law, and others. Among his other works are *Free Thoughts on Religion* (1720), and *Origin of Honour* (1732).

Mandeville, SIR JOHN DE, the name adopted by the compiler of an extraordinary book of travels originally written in French between 1357 and 1371. An English version was made from the French MS. about the beginning of the 15th century. That part of the book which treats of the Holy Land may be a record of the author's experience, but the greater part is taken from the travels of the friar Odoric, written in

1330, and other sources. The first printed English edition is that of Wynkyn de Worde, 1499; and the best that of Halliwell, 1839, reprinted 1866. Mandeville had long the reputation of being the 'father of English prose.' He was said to have been born at St. Albans about 1300, set out on his travels in 1322, returned in 1357, died and was buried at Liège; but much of his personal history is mere invention, and the very name of the compiler of the travels is a matter of doubt.

Man'dible, the term more especially applied to both the upper and under jaws of birds. In mammals it is applied only to the under jaw, and in the Articulata to the upper or anterior pair of jaws, which are generally solid, horny, biting organs. It is also applied to the beak of the Cephalopods.

Manding'oes, a negro tribe of West Africa, remarkable for their intelligence, and generally for the advances they have made in civilization. The original country of this people, who are now spread over a great portion of West Africa, was the north slope of the high table-land of Senegambia. They are nominally Mohammedans, are keen traders, work iron and gold, manufacture cotton cloth and leather, and cultivate a variety of crops. They live in small independent states, their clay-built walled towns often containing about 10,000 inhabitants.

Mandioc. See *Cassava*.

Mandogarh. See *Mandu*.

Man'doline, a musical instrument of the guitar kind. There are several varieties, each with different tunings. The Neapolitan has four strings tuned like those of the violin, G, D, A, E; the Milanese has five double strings (each pair in unison) tuned G, C, A, D, E. A plectrum is used in the right hand, the fingers of the left stopping the strings on the fretted finger-board.

Mandrake, the popular name of plants of the genus *Mandragōra*, nat. order Solanaceæ, natives of south and east of Europe and Western Asia, and not uncommon in British gardens. *M. officinālis* has large tap-roots; the leaves radical, sessile, ovate, entire, and waved. There is no stem; but the flowers, which are white with a bell-shaped corolla, stand upon simple stalks. The fruit is a large two-celled berry of an orange colour, containing many kidney-shaped seeds. The root possesses narcotic qualities, and from its occasional resemblance to the human figure was formerly supposed to possess an inferior kind of ani-

mal life, and to shriek when torn up. It was believed to have many magical virtues, and to be an aphrodisiac and a cure for barrenness (Gen. xxx. 14, 16).

Mandrill, a species of baboon (*Cynocephalus mormon*), which is distinguished by the short or rudimentary tail, by the elongated dog-like muzzle, and by the presence



Mandrill (*Cynocephalus mormon*).

of buttock callosities which are generally brightly coloured. The mandrill inhabits Western Africa, where they associate in large troops. Full-grown males measure about 5 feet; they are exceedingly strong and muscular, and fierce in disposition. It has cheek protuberances coloured with stripes of brilliant red and blue.

Mandu, or MANDOGARH, a deserted town in Dhar State, Central India, the ancient capital of Malwah, 38 miles s.w. of Indore. It is celebrated for its magnificent ruins, including the great mosque, the finest specimen of Afghan architecture in India; a marble mausoleum of one of the kings of Malwah, a royal palace, &c. It occupies about 8 sq. miles of ground.

Mandu'ria, a town of Southern Italy, prov. of Lecce, 54 miles N.N.W. of Otranto. Pop. 10,291.

Mandvi, seaport in the state of Cutch, Bombay, India. It is situated on the Gulf of Cutch, 36 miles s. of Bhuj, the capital of the state, and is a port of call for British-India steamers. Pop. 35,980.

Ma'neh (Heb.), a Hebrew weight used in estimating gold and silver, and believed to contain a hundred shekels of the former and sixty of the latter.

Ma'nes, among the Romans, the souls or

ghosts of the dead, to whom were presented oblations of victims, wine, milk, garlands of flowers, &c. A similar worship of ghosts or ancestral spirits prevails among many races.

Ma'nes, founder of the sect of Manichæans. See *Manichean*.

Man'etho, an Egyptian priest and historian, who belonged to the town of Sebenytus in Lower Egypt, and lived in the reign of Ptolemy Soter, about the beginning of the 3d century B.C. His history was divided into three books, and beginning with the fabulous or mythological history of Egypt, ended with the 30th dynasty, when Egypt fell under the rule of Alexander the Great. The history itself is lost, but the lists of the dynasties are preserved in Julius Africanus and Eusebius, and some fragments of the work are to be found in Josephus in his work against Apion.

Manfred, king of the Two Sicilies; born 1231, died 1266. A natural son of the Emperor Frederick II., he was regent in Italy first for his brother and then for his nephew, on whose ruined death he was crowned king. He refused to resign in favour of his nephew, was excommunicated, and his kingdom of the Sicilies given as a papal fief to Charles of Anjou. The latter marched into Naples and gained a victory, in which Manfred was killed.

Manfredo'nia, a seaport of South Italy, province of Foggia, on the gulf of same name, at the foot of Mount Gargano, 22 miles north-east of Foggia. It was founded by King Manfred about 1263. Pop. 8324.

Mangalore', a seaport and military station of India, in South Canara district, Madras. It is a clean and prosperous town, and has large exports of coffee. There is a Roman Catholic College, and the Basel Lutheran Mission has its head-quarters here. Pop. 32,099.

Man'ganese, chemical symbol Mn, atomic weight 55, a metal of a dusky-white or whitish-gray colour, very hard and difficult to fuse. Exposed to air it speedily oxidizes; it decomposes water with evolution of hydrogen. The common ore of manganese is the dioxide, black oxide, or peroxide (MnO_2), the pyrolusite of mineralogists, a substance largely employed in the preparation of chlorine for the manufacture of bleaching-powder or chlorate of lime. It is employed in the manufacture of plate-glass, to correct the yellow colour which oxide of iron is apt to impart to the glass. It is also used in making the black enamel of pottery. Other

oxides are the protoxide (MnO), sesquioxide (Mn_2O_3), the red oxide (Mn_3O_4), and permanganic acid (Mn_2O_7). The latter is only known in solution or in a state of combination. It is largely used in analytical chemistry. Metallic manganese is obtained by reduction of the oxide by means of heat and finely-divided carbon. It resembles iron in appearance and properties; is a constituent of many mineral waters, and is employed in medicine. In steel manufacture it is used in certain proportions with advantage as regards the ductility of the steel and ability to withstand forging, and in other manufacturing operations it forms an important element.

Manganese Bronze, a kind of bronze in which the copper forming the base of the alloy is mixed with a certain proportion of ferro-manganese, and which has exceptional qualities in the way of strength, hardness, toughness, &c. Various qualities are manufactured, each suited for certain special purposes. One quality, in which the zinc alloyed with the treated copper is considerably in excess of the tin, is made into rods, plates, &c., and when simply cast is said to have a tensile strength of about 24 tons per square inch, with an elastic limit of from 14 to 15 tons. Another quality used in gun-founding has all the characteristics of forged steel without any of its defects. Another quality is in extensive use for toothed-wheels, gearing, brackets, and all kinds of machinery supports. From its non-liability to corrosion it is largely employed in the manufacture of propellers.

Manganese-brown. See *Cappagh-brown*.

Manganite, one of the ores of manganese, the hydrated sesquioxide. It is also called *Gray Manganese-ore*, and is used in the manufacture of glass.

Mange, a cutaneous disease to which dogs, horses, cattle, &c., are liable. It resembles in some measure the itch in the human subject, ordinary mange being due to the presence of a burrowing parasite. Both local application and internal remedies are used in its cure.

Mangel-wurzel, a large-rooted species of beet (*Beta vulgaris macrorrhiza*) extensively cultivated in Britain and on the Continent for feeding cattle. It requires a liberally-manured generous soil, which in favourable circumstances may grow from 70 to 80 tons per acre. Produced extensively in U. S.

Mango, the fruit of the mango-tree (*Mangifera indica*), natural order Anacardiaceæ,

a native of tropical Asia, but now widely cultivated throughout the tropics. Fine varieties produce a luscious, slightly acid fruit much prized for dessert. The large flat kernel is nutritious, and has been cooked for food in times of scarcity.

Mango-bird, the Indian oriole (*Oriolus Kundoo*).

Mango-fish, a fish of the Ganges (*Poly-nemus risua*), about 15 inches long, and highly esteemed for food. It is of a beautiful yellow colour, and the pectoral fins have some of the rays extended into long threads. It ascends the Ganges in April and May, and is then sought after as a great delicacy.

Mangold-wurzel. See *Mangel-wurzel*.

Mangosteen', a tree of the East Indies, *Garcinia Mangostana*, natural order Guttiferae. The tree grows to the height of 18 feet, and the fruit is about the size of an orange, and contains a juicy white pulp of a delicate, sweet, sub-acid flavour. It is esteemed one of the most delicious and wholesome of all known fruits.

Mangrove (*Rhizophora*), a genus of plants (type of the family Rhizophoraceæ) consisting of trees or shrubs which grow in tropi-



Mangrove (*Rhizophora Mangle*).

cal countries along the muddy beaches of low coasts, where they form impenetrable barriers for long distances. They throw out numerous roots from the lower part of the stem, and also send down long slender roots from the branches, like the Indian banyan-tree. The seeds germinate in the seed-vessel, the root growing downward till it fixes itself in the mud. The wood of the *R. Mangle* is dark-red, hard, and durable, and the bark is used for tanning. The

fruit is said to be sweet and edible, and the fermented juice is made into a kind of light wine. The name is also given to the genus *Avicennia* of the verbenaceae family, which occupies large tracts of shore in tropical countries, extending as far south as New Zealand and Tasmania.

Manheim. See *Mannheim*.

Mani. See *Manichæans*.

Mania. See *Insanity*.

Manichæans (man-i-kē'anz), or MANICHEES, an Oriental religious sect founded by Manichæus, Manes, or Mani, a Persian of the 3d century after Christ, educated in the religion of Zoroaster. His object was to incorporate Zoroastrian dualism with Christianity. (See *Zoroaster*.) In the fervour of his fanaticism he gave himself out to be the Paraclete promised in the Gospel of John, by which he understood, not the Holy Ghost, as many have erroneously imagined, but a teacher commissioned to diffuse and perfect Christianity, and free it from the vile corruptions of the evil genius Ahriman. (See *Ahriman*.) Manes appeared as a religious teacher under Sapor I. As a man of multifarious accomplishment he attracted great attention; but the hostility of the magi forced him to a speedy exile. He wandered into distant countries still pursuing his mission, and in the East his contact with Buddhism gave new shape and tinge to his eclectic views. On his return to Persia Hormisdas received him with welcome; but under his successor Varanes, Manes was apprehended, and according to an Oriental form of punishment flayed alive, while his skin was stuffed and hung up in public. His system spread over various portions of the Christian church, and Augustin was for a season fascinated by its speculations.

Man'idæ, the family to which the pangolins or scaly ant-eaters belong. See *Manis*.

Man'ifest is a document signed by the master of a vessel at the place of lading, to be exhibited at the custom-house, containing a specific description of the ship and her cargo, with the destination of the ship and of each package of the goods, &c.

Man'ihot. See *Cassava*.

Mani'la, or MANIL'LA, the capital city of the island of Luzon and of all the Philippine Islands, see of the Roman Catholic primate, and residence of the Spanish governor, lies on the bay of the same name, and at the mouth of the river Pasig. It consists of an old fortified city with extensive suburbs, in which are the mass of the population, and

the business premises, factories, and residences of the European inhabitants. Manila is the centre of commerce of the Philippines, and exports sugar, tobacco, cigars and cheroots, indigo, Manila hemp, coffee, mats,



hides, trepang, rice, &c. It imports British and United States cloths, hardware, &c., and a great variety of articles, tea, pottery, &c., from China. The manufactures consist chiefly of cigars and cheroots, and hemp and cotton fabrics. Manila was founded by Miguel Lopez de Legaspé, the conqueror of the Philippine Islands, in 1571. It has frequently suffered from earthquakes, one of the most disastrous being that of 1863. Pop. 270,000.

Manilla, or MANILA HEMP. See *Abaca*.

Man'ioc. See *Cassava*.

Man'iple, in the Roman Catholic and some other churches, one of the sacred vestments, being an ornament worn by the priest above the left wrist at the celebration of the eucharist. It is now of the same width and colour as the stole and the vestment or chasuble, fringed at the ends, and generally about 1½ yard in length. See *Chasuble*.

Manipur (-pör'), a native state of North-eastern India, consisting principally of an extensive valley in the heart of the mountainous country lying between Assam, Cachar, Burmah, and Chittagong; area, 8000 sq. miles; pop. 221,070.

Ma'nis, a genus of edentate mammals covered with large, hard, triangular scales with sharp edges, and overlapping each

other like tiles on a roof: often called *Scaly Lizards*, *Scaly Ant-eaters*, or *Pangolins*. See *Pangolin*.

Mani'sa (anciently *Magnesia*), a town in Asiatic Turkey. Pop. about 60,000.

Manistee, Manistee co., Mich., one of the chief lumber manuf. points on Lake Michigan. Pop. 1890, 12,812.

Manitch, MANYTCH, a river in South Russia, which in its course connects a series of long narrow salt lakes, and joins the Don near Tcherkask. It has been proposed to utilize it in the construction of a canal to join the Sea of Azov and the Caspian.

Man'ito, MAN'ITOU, among certain of the N. American Indians, a name given to whatever is an object of religious awe or reverence, whether a good or evil spirit or a fetish. Two manitos or spirits are spoken of by pre-eminence, the one the spirit of good, the other the spirit of evil.

Manito'ba, a province of the Dominion of Canada, bounded on the south by the United States and the province of Ontario, and on the west, north, and east by the N.W. Territories, namely Assiniboia, Saskatchewan, and Kewatin. It occupies a position nearly in the centre of the North American continent, and extends from 49° to 52° 50' N. lat.; and from 89° to 101° 20' W. lon.; area, estimated at 60,520 sq. miles. The climate is warm in summer, but very cold in winter. The summer mean is about 66°, but in winter the thermometer sinks to 30°, 40°, and sometimes 50° below zero, though this severe cold is mitigated by a clear dry atmosphere. The summer months are part of May, June, July, August, and September. The principal rivers are the Assiniboine and the Red River, the latter having the greater part of its course in the United States. The largest lakes are Winnipeg, Winnipegosis, and Manitoba, the two former being only partially included within the boundaries of the province. The greater part of the province consists of level treeless prairie land, covered with a rich vegetable growth in summer. The banks of the streams, however, are lined with a timber belt extending from about half a mile to ten miles back. The soil is generally a rich black mould, resting partly on a limestone formation, and partly on a thick coat of hard clay. Wheat, oats, barley, Indian corn, hops, flax, hemp, and all kinds of garden vegetables produce excellent crops. For wheat growing Manitoba presents peculiar advantages. Potatoes and all other

root-crops thrive well, and the prairie grasses furnish good hay. Game is abundant, and the rivers and lakes teem with fish. Manitoba is divided into five electoral districts for Dominion elections, each sending one member to the House of Commons. The province likewise sends three members to the Senate of the Dominion. The public affairs are administered by a lieutenant-governor, an executive council of five members, and a legislative assembly of thirty-one members elected for four years. The school system established by law is entirely denominational, and is supported by local assessments, supplemented by legislative grants. The capital of the province is Winnipeg, situated at the junction of the Assiniboine and Red Rivers; other towns are Portage la Prairie, Brandon, Selkirk, and Emerson. The nucleus of Manitoba was the Red River Settlement established in 1812, but little progress was made till the territory became part of Canada in 1870. The trade of the province has been greatly increased since 1878, when Winnipeg was connected with the railway system of the United States; and the construction of the Canadian Pacific Railway, which crosses the province from east to west, has added materially to its progress and prosperity. Pop. 1891, 154,442.

Manitoba Lake, a lake of Canada, province of Manitoba, 30 or 40 miles S.W. of Lake Winnipeg, about 120 miles in length by about 25 miles in breadth; area, 1900 sq. miles. It receives the waters of several lakes at its northern extremity, and at its southern White Mud River. It discharges into Lake Winnipeg through the Dauphin River.

Manitou. See *Manito*.

Manitou'lin Islands, a group of N. American islands in Lake Huron, consisting of Grand Manitoulin, 80 miles long by 5 to 30 broad, Little Manitoulin, and Drummond Island. The two former belong to Canada, the latter to the U. States (Michigan). Pop. about 2000, more than one-half being Indians.

Manitowoc, city of the United States, capital of Manitowoc county, Wisconsin, on Lake Michigan, at the mouth of a river of the same name. It has a good harbour and considerable trade. Pop. 1890, 7710.

Manka'to, a town, United States, state of Minnesota, 70 miles S.W. of St. Paul. It is a thriving centre of a large agricultural district; has various manufactures and a good trade. Pop. 1890, 8838.

Manna, the sweet concrete juice which is obtained by incisions made in the stem of a species of ash, *Fraxinus Ornus*, a native of Sicily, Calabria, and other parts of the south of Europe. The manna of commerce is collected in Sicily, where the manna-ash is cultivated for the purpose in regular plantations. The best manna is in oblong pieces or flakes of a whitish or pale-yellow colour, light, friable, and somewhat transparent. It has a slight peculiar odour, and a sweetish taste mixed with a slight degree of bitterness, and is employed as a gentle laxative for children or persons of weak habit. It is, however, generally used as an adjunct to other more active medicines. Other sweetish secretions exuded by some other plants growing in warm and dry climates, as the *Eucalyptus mannifera* of Australia, the *Tamarix mannifera* or *gallica* of Arabia and Syria, are considered to be kinds of manna. Small quantities of manna, known under the name of *Briançon manna*, are obtained from the common larch. In Scripture we are told that a substance called manna was miraculously furnished as food for the Israelites in their journey through the wilderness of Arabia. Some persons identify it with the saccharine substance yielded by the *Tamarix mannifera*.

Manna-ash. See *Manna*.

Manna-croup, a granular preparation of wheat-flour deprived of bran. It consists of the large hard grains of wheat-flour retained in the bolting-machine after the fine flour has been passed through its meshes. It is used for making soups, puddings, &c. See also *Manna Grass*.

Manna Grass, the *Poa* or *Glyceria fluitans*, a grass growing in wet places throughout the temperate regions of the globe. It affords food for cattle, and the seeds, called *Polish manna*, *manna seeds*, and *manna-croup*, are used in some countries in soups and gruels.

Mannheim (mán'him), a town of Germany, grand-duchy of Baden, on the right bank of the Rhine, near the confluence of that river with the Neckar. It is regularly laid out in square blocks, and is surrounded by a promenade on the site of the ancient ramparts. It is connected by a bridge with Ludwigs-hafen, a thriving town on the opposite bank of the Rhine, in Bavarian territory. It has an extensive harbour and docks, and is the chief commercial town on the Upper Rhine. Industries include the manufacture of machinery, sugar, chemicals, wall-paper, to-

bacco, &c. The principal buildings are the Schloss or castle, the theatre, arsenal, Jesuits' church, &c. The town has suffered severely from war; in the siege of 1795 only a few houses were uninjured. Pop. 1890, 79,058.

Manning, HENRY EDWARD, CARDINAL, born at Totteridge, Hertfordshire, 1808; educated at Harrow and Balliol College, Oxford; rector of Lavington and Grafton, Sussex (1834-40); archdeacon of Chichester (1840-51). He took an active part in the Tractarian movement, and in 1851 joined the Church of Rome, and was ordained priest. On the death of Cardinal Wiseman he succeeded him as Archbishop of Westminster (1865), and ten years after he was made cardinal. Social and philanthropic questions received much of his attention; he was an ardent supporter of total abstinence, and he was a member of the commissions on the housing of the poor, and on education. Besides sermons, he has written *The Temporal Power of the Pope*; *The True Story of the Vatican Council*; *The Four Great Evils of the Day*; numerous pamphlets, &c. Died Jan. 14, 1892.

Mannite ($C_6H_{14}O_6$), a peculiar variety of sugar obtained from manna, and also found in the juices which exude from several species of cherry, in the fermented juice of beet-root, carrots, &c.

Manœuvres, the movements and evolutions of any large body of troops or fleet of ships, for the purpose of testing the efficiency of the various bodies of the service under the conditions of actual warfare, and for the purpose of instructing officers in tactics, and officers and men in their various duties. For these purposes mimic warfare is carried on periodically under the name of military or naval manœuvres by Britain and several of the European powers.

Man-of-war Bird. See *Albatross*.

Manom'eter (Gr. *manos*, rare, *metron*, measure), an instrument to measure or show the alterations in the rarity or density of the air, or to measure the rarity of any gas. Such instruments as measure the elastic force of steam are also properly termed manometers. They are variously constructed.

Man'or, originally a piece of territory held by a lord or great personage, who occupied a part of it, as much as was necessary for the use of his own immediate family, and granted or leased the remainder to tenants for stipulated rents or services. Manors were also called baronies, as they still are lordships, and the lord was em-

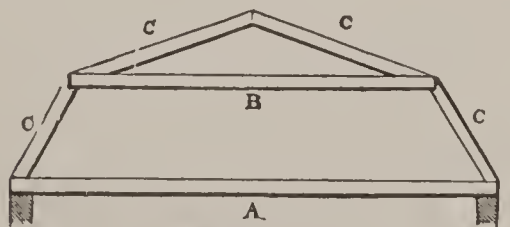
powered to hold a domestic court called the *court baron* for punishing misdemeanours, settling disputes, &c., within the manor.

Manre'sa, a city in Spain, province of and 34 miles north-west of the city of Barcelona. It is well built, surrounded by old walls, commanded by a fort, and has considerable manufactures, &c. Pop. 16,526.

Mans, **LE** (lè măn), a town of France, capital of department Sarthe, on a height above the Sarthe, 115 miles south-west of Paris. The principal edifice is a fine Gothic cathedral, in part supposed to be of the 10th century. The nave is in the Romanesque style; the choir (104 feet high) is Gothic of the 13th century. The principal manufactures are woollen and linen goods, machinery, leather, &c. Le Mans existed in the time of the Romans under the name of Cenomani; it was the birthplace of Henry II., the first of the Plantagenet kings of England; it witnessed the final dispersion of the Vendean army in 1793; and was the scene of the defeat of the French army under Chanzy (to whom a monument has been erected) by the Germans under Prince Frederick Charles, January 1871. Pop. 1891, 57,412.

Mansard (măn-săr), **FRANÇOIS**, French architect, born in Paris 1598, died 1666. The roof known by his name was his invention. (See *Mansard Roof*.) His nephew, Jules Hardouin, who assumed his name (1645–1708), attained great fame as an architect. The Palais de Versailles, Hôtel des Invalides, the Place Vendôme, and other works of the reign of Louis XIV., were from his designs.

Mansard Roof, a roof formed with an upper and under set of rafters on each side,



Mansard Roof.

A, Tie-beam. B, Collar-beam. c c, Rafters.

the under set approaching more nearly to the perpendicular than the upper.

Manse, in Scotland, the dwelling-house of a parish minister of a rural parish. Every minister of a rural parish (*quoad omnia*) is entitled to have a manse erected and upheld by the heritors, but the ministers of royal burghs have properly no such right, unless where there is a landward district belonging

to the parish in which the burgh lies. The term is sometimes loosely applied to the dwelling-house of dissenting ministers.

Mansel, **HENRY LONGUEVILLE**, a logician and theologian, born at Cosgrove, Northamptonshire, 1820; died in London 1871. He was educated at Merchant Taylors' School, London, and at St. John's College, Oxford, where he took his degree with double first-class honours in 1843. He became professor of moral and metaphysical philosophy at Oxford in 1859; professor of ecclesiastical history 1867; and Dean of St. Paul's, London, 1868. Among his publications are *The Philosophy of Kant* (1856), *The Limits of Religious Thought*, being the Bampton Lectures for 1858; *Metaphysics, or the Philosophy of Consciousness* (1860), *The Philosophy of the Conditioned* (1866), &c. A volume of *Letters, Lectures, and Reviews* appeared in 1873.

Mansfeld, **PETER ERNST**, **COUNT VON**, Austrian general and statesman, born 1517, died 1604. He became governor of the Low Countries after the death of the Duke of Parma.—His natural son, **ERNST** (1585–1626), one of the best generals of the age, being disappointed in regard to the possession of his father's lands, joined the Protestant princes and became the bitter enemy of Austria. He was defeated by Wallenstein at Dessau in 1626, and died while making his way to England.

Mansfield, a town, England, Nottinghamshire, 14 miles north by west of Nottingham, in a deep valley, surrounded by vestiges of Sherwood Forest. There are cotton-mills, manufactures of silk and cotton hosiery, lace thread-mills, &c. Pop. 1891, 15,925.

Mansfield, **WILLIAM MURRAY**, **EARL OF**, the fourth son of David, Lord Stormont, was born at Scone, in Scotland, 1705, died 1793. Educated at Westminster School and at Oxford, he entered Lincoln's Inn and was called to the bar in 1731. In 1742 he was appointed solicitor-general, and obtained a seat in parliament about the same time. In 1754 he was attorney-general, and in 1756 he was appointed chief-justice of the King's Bench, and made Baron Mansfield. In 1776 he was advanced to the dignity of earl. He frequently refused high office, notably that of chancellor. On the trial of Woodfall for publishing Junius's Letters, and on some other occasions, he showed himself the zealous supporter of the government, and gave offence to the popular party. During the riots of 1780 his house

in London was burned down by the mob. In 1788 he resigned his office of chief-justice; and the remainder of his life was spent in retirement. He was a great lawyer, not merely in a technical sense, but as one who could direct the practice of the courts towards broad principles of jurisprudence.

Mansfield, Richland co., Ohio, has manufactories of threshing machines, saw-mill and foundry products, machinery, woollens, paper, &c. Pop. 1890, 13,473.

Mansfield College, a purely theological institution established at Oxford for the education of men for the Nonconformist ministry, and opened in 1889. Its students must be graduates of some recognized university, or undergraduates of Oxford who have passed Moderations. The staff consists of five professors and as many fellows.

Manslaughter. See *Homicide*.

Mansu'ra, a town of Lower Egypt, on the Damietta branch of the Nile, 34 miles s.w. of Damietta. It is the chief depot of the bread-stuffs, cotton, indigo, hemp, and flax which this part of the Delta produces; has linen and cotton manufactories, &c. Pop. 26,942.

Mant, RICHARD, D.D., born at Southampton, where his father held a living in the church, 1776, began his ecclesiastical career as vicar of Coggeshall, in Essex, in 1810. In 1820 he became bishop of Kilaloe; in 1823 bishop of Down and Connor; and in 1842 was translated to the see of Dromore. He died in 1848. The works of Dr. Mant consist of a vast number of sermons and tracts, but his celebrity rests on an edition of the Bible, which he prepared in conjunction with Dr. D'Oyley.

Mantchoos. See *Manchuria*.

Mantegna (màn-ten'yà), ANDREA, early Italian painter, born at Padua 1431, died at Mantua 1506. He was a pupil of Squarcione, who adopted him as a son, but this affectionate relation did not continue. About 1459 he went to Verona, where he painted a magnificent altar-piece in the church of St. Zeno. About 1466 he removed to Mantua, and the rest of his life was passed there, with the exception of two years at Rome. At Mantua, where he was patronized by the Marquis Gonzaga, he opened a school, and painted among other important works the Triumph of Julius Cæsar, now at Hampton Court. One of the latest and best of this artist's works is the Madonna dell Vittoria, now in the

Louvre at Paris. There are others of his works in the Louvre, in particular Wisdom vanquishing Vice, and a mythological work, Parnassus. Mantegna excelled in perspective, which was then a rare merit; he also excelled in engraving, and introduced the art of engraving on copper into Upper Italy. His two sons, Francesco and Carlo, were also painters.

Man'telet, or MANT'LET, a musket-proof shield of iron or some other material, used at sieges for embrasures as a protection to gunners, and also for protecting markers at rifle-shooting target ranges.

Mantell', GIDEON ALGERNON, geologist and palæontologist, born at Lewes, in Sussex, 1790, died in London 1852. He practised medicine in his native town, and latterly in London. Through his investigations the fossilized skeletons of those gigantic reptiles the Iguanodon and Hylæosaurus were discovered. He was a popular lecturer on geology, and published *The Fossils of the South Downs* (1822), *Illustrations of the Geology of Sussex* (1822), *Wonders of Geology* (1838), and *Medals of Creation* (1844).

Mantes (mânt), a town in France, department of Seine-et-Oise, on the Seine, 36 miles w.n.w. of Paris. It contains a fine Gothic church. Pop. 6607.

Manteuffel (màn'toi-fl), EDWIN, BARON VON, German field-marshal, born 1809, died 1885. He entered the army in 1827 and advanced rapidly, becoming lieutenant-general of cavalry 1861. He took part in the Danish war of 1864, and next year was appointed governor of Schleswig. During the war between Prussia and Austria he commanded the army of the Main and fought at Hemstadt, Vettingen, Rossbrunn, and Würzburg. He played a distinguished part in the Franco-German war, especially in several actions around Metz, at Amiens, and in driving Bourbaki's army across the frontier into Switzerland. From June 1871 to July 1873 he commanded the army of occupation in France, and was made field-marshal. In 1879 he was appointed governor-general of Alsace-Lorraine.

Mantine'a (Greek, *Mantinea*), an ancient city of Greece, in Arcadia, on the frontier of Argolis. It was the scene of the victory and death of Epaminondas B.C. 362; and other famous battles.

Mantis, a genus of orthopterous insects, remarkable for their grotesque forms. They frequent trees and plants, and the forms and colours of their bodies and wings are so

like the leaves and twigs which surround them as to give them remarkable power to elude observation. (See *Mimicry*.) The *M. religiōsa*, or praying-mantis, has received its



Praying-mantis (*Mantis religiōsa*).

name from the peculiar position of the anterior pair of legs, resembling that of a person's hands at prayer. In their habits they are very voracious, killing insects and cutting them to pieces. They are natives chiefly of tropical regions, but are also found in France, Spain, and the warmer parts of Europe. They are very pugnacious, and are kept by the Chinese for the purpose of watching them fight.

Mantis-crab, a name given to crustacea of the genus *Squilla*, from the second pair of jaw-feet being very large, and formed very like the fore-legs of insects of the genus *Mantis*.

Mantle, a kind of cloak or loose garment to be worn over other garments. In heraldry the name is given to the cloak or mantle which is often represented behind the escutcheon. In zoology the mantle is the soft skin or integument of molluscous animals, otherwise known as the *pallium*. This structure secretes the shell when present, and where the shell is absent the mantle forms an investing sac or integument in which the viscera and other organs are contained and protected.

Mantlet. See *Mantelet*.

Man'tua (Italian, *Mantōva*), a strongly fortified town of Northern Italy, one of four forming the *Quadrilateral*, capital of the province of the same name, 80 miles E.S.E. of Milan, on an almost insular site on the Mincio, which here divides into several arms, and afterwards spreads out into a marshy lake. The streets are regular and wide, and the public and private buildings have an ancient and substantial look. The most remarkable edifices are the cathedral, not very capacious, but after an elegant design by Giulio Romano; several churches; the ancient ducal palace of the Gonzagas, partly used as barracks; the Academy of Science and the Fine Arts; the Lyceum, containing a library and museum; the arsenal, and two theatres, one called the Teatro Virgiliano, employed

for open-air performances in summer. The manufactures are limited. The trade is chiefly in the hands of the Jews, who live in a separate quarter called the Ghetto. Mantua is a very ancient city, having been founded, it is said, by the Etruscans before the building of Rome. The Gonzagas governed it for about three centuries with great ability, and distinguished themselves by the splendour of their court and their patronage of literature and art. Virgil was born at the adjoining village of Andes, supposed to be the modern Pietole. Pop. 28,048.—The province, which is intersected by the Po, Mincio, and other streams, produces rice, wheat, silk, wine, &c.; area, 961 sq. miles; pop. 315,314.

Man'u, an early Sanskrit writer, author of a book of laws, civil and religious, called *Dharma-Shastra*, still extant.

Manual Alphabet. See *Deaf and Dumb*.

Manumission, among the Romans, the solemn ceremony by which a slave was emancipated.

Manures, vegetable, animal, and mineral matters introduced into the soil to accelerate vegetation and increase the production of crops; substances used to improve the natural soil, or to restore to it the fertility which is diminished by the crops annually carried away. Animal substances employed as manures comprehend the putrefying carcasses of animals, ground bones, blood, the excrements of animals, as the dung of horses, cattle, sheep, poultry, &c.; urine, guano (the decomposed excrement of aquatic birds); the scrapings of leather, horn, and the refuse of the shambles; the hair or wool of animals. Liquid manure, consisting of town sewage, the drainings of dung-heaps, stables, and cow-houses, is largely employed in many districts. Almost every kind of vegetable substance, in one state or another, is used as manure. The principal mineral substances employed as manures are lime, chalk, sand, clay, marl; sulphates of potash, soda, ammonia, and magnesia; nitrates of potash and soda; and phosphates of lime. It is from containing one or other of these substances that apatite, basic slag, cubic nitre, kainite, &c., are so valuable. Manures are usually distributed over the surface of the land and then ploughed or harrowed into the soil; or they may be applied in drills when the object is to give direct benefit to the young plant. The kind of manure required for each crop depends on the nature of the crop, the quality and composition of the soil, and many other conditions. Mo-

dern researches upon plant nutrition, and the chemistry of agriculture in general, have shown us that the food of plants may be classed under the two headings of *air food* and *mineral food*. Air food consists of ammonia, water, and carbon dioxide; mineral food, of those substances which remain as ash when the plant is ignited. The former class of food is supplied to the plant partly from the atmosphere and partly from the soil, the latter from the soil entirely. In the production of food by natural processes of plant-growth a certain amount of air food and also of mineral food is abstracted from the soil, those amounts varying for different species of plants; if this food be returned to the soil, then a further growth of plants may be expected; if, however, seed is sown in the partially impoverished soil, there must be a decrease in the amount of crop obtained from that soil. As the plants serve to nourish animals, it follows that the substances which have been withdrawn from the soil by the plants may be returned to it in the shape partly of animal excreta, and partly of ground bones, &c. Different plants require different kinds of food; if, therefore, the kind of crop grown on the same land be varied from year to year, and if the soil be tilled so as to unlock its natural supplies of mineral food, it will be found that the average yield of crops may be maintained simply by the restitution to the land of that amount of food which has been removed from it by the plants. In this restitution it must be borne in mind that it is not only mineral but also air food which is to be restored. Plants undoubtedly draw large supplies of nitrogen and carbon from the atmosphere, but it has been abundantly proved that unless this supply is augmented by artificial sources the plants soon begin to fall off and the yield of crop very sensibly to diminish. The theory of manuring consists, then, in maintaining in the soil such an amount of plant food, both mineral and organic, as shall enable us to reap the largest possible amount of crops from that soil.

Manuscripts (Lat. *manu scriptus*, written by the hand) are literally writings of any kind, whether on paper or any other material, in contradistinction to printed matter. Previous to the introduction of printing all literature was contained in manuscripts, and the deciphering and proper use of these form an important part in the science of palæog-

raphy. All the existing ancient manuscripts are written on parchment or on paper. The paper is sometimes Egyptian (prepared from the real papyrus shrub), sometimes cotton or silk paper (*charta bombycina*). The most common ink is the black, which is very old. Red ink of a dazzling beauty is also found in ancient times in manuscripts. With it were written the initial letters, the first lines, and the titles, which were thence called *rubrics*. Blue, green, and yellow inks were more rarely used. On rare occasions gold and silver were the mediums, though from their cost they are oftenest confined to initial letters. With respect to external form, manuscripts are divided into rolls (*volume*), and into stitched books or volumes (properly *codices*). Among the ancients the writers of manuscripts were mainly freedmen or slaves (*scribae librarii*). At a later period the monks were largely engaged in the production of manuscripts. In all the principal monasteries was a *scriptorium*, in which the *scriptor* or scribe could pursue his work in quiet, generally assisted by a *dictator*, who read aloud the text to be copied; the manuscript was then revised by a *corrector*, and afterwards handed to the *miniator*, who added the ornamental capitals and artistic designs. The most ancient manuscripts still preserved are those written on papyrus which have been found in Egyptian tombs. Several of these are of date considerably before the Christian era: notably fragments of the *Iliad* and a papyrus containing the orations of Lycophron and Euxenippus, 11 feet in length and containing 49 columns of writing. Next to them in point of age are the Latin manuscripts found at Herculaneum. Then there are the manuscripts of the imperial era of Rome, among which are the Vatican Terence and Septuagint, and the Alexandrine codex of the British Museum. Numerous manuscripts of the Old and New Testaments of the 2d and 3d centuries exist; and among those of profane authors may be noted that of Virgil (4th century), in the Laurentian Library at Florence; a Livy (5th century), in the Imperial Library of Vienna; the Jewish Antiquities of Josephus, in the Ambrosian Library, Milan, &c. It was a common custom in the middle ages to obliterate and erase writings on parchment, for the purpose of writing on the materials anew, manuscripts thus treated being called *palimpsests*.

The art of illuminating manuscripts dates from the remotest antiquity. The Egyp-

tian papyri were ornamented with vignettes or miniatures attached to the chapters, either designed in black outlines or painted in primary colours in distemper. The oldest ornamented Greek and Roman manuscripts that have survived are the Dioscorides of Vienna and the Virgil of the Vatican, both of the 4th century, and having vignettes or pictures in a Byzantine style of art. From the 8th to the 11th century the initial letters in use were composed of figures of men, quadrupeds, fishes, birds, &c. The initials of the 12th century are made up of masses of conventional foliage interspersed with the animal figures of the preceding centuries. Continuous borders, with vignettes, tail-pieces, &c., were also prevalent in later times, and some manuscripts are ornamented with very artistic designs. In the 16th century the art of illumination became extinct. Some attempts have been made to revive it by adorning paper, parchment, and vellum with designs in colours or metals.

Manu'tius, **ALDUS**, or **ALDO MANUZIO**, Italian printer, born about 1447, died 1515. In 1488 he established himself as a printer at Venice, but the first work which he finished was not published till 1494. In the course of the ensuing twenty years he printed the works of the most ancient Latin and Greek authors extant, as well as many productions of his contemporaries, and some treatises of his own composition. He was the inventor of the italic or cursive character, hence called *Aldine*. His business was continued by his son Paolo Manuzio, born 1512, died 1574, a man distinguished as a classical scholar no less than as a printer; and by his grandson Aldo, born 1547, died 1597. See *Aldine Editions*.

Manyplies, the popular name given to the *psalterium* or *omasus*, the third chamber or cavity of the ruminant stomach.

Manytch. See *Manitch*.

Manzanillo (mân-thâ-nêl'yō). (1) A seaport on the south coast of Cuba, with a good roadstead. Pop. 8000. (2) A seaport of Mexico, state of Colima, on the Pacific. Pop. 4000.

Manzo'ni, **ALESSANDRO**, an Italian poet and novelist, was born 1784, died 1873. He was the son of Count Pietro Manzoni and of the Marchioness Giulia Beccaria, daughter of the Marquis Cesare Beccaria, author of the well-known treatise on Crimes and their Punishment. After his father's death in 1805 he lived for some time in

Paris with his mother, and in 1808 he married the daughter of a Genoese banker, under whose influence he settled down into the fervent Catholicism which coloured all the rest of his life. His chief works are the *Inni Sacri*, a series of sacred lyrics; *Il Cinque Maggio*, a powerful ode on the death of Napoleon; the tragedies *Il Conte di Carmagnola*, and *Adelchi*; and his great novel *I Promessi Sposi* (The Betrothed).

Maoris (mâ'o-riz), the name given to themselves by the natives of New Zealand. See *New Zealand*.

Maormor, **MORMAER**, the name given to the hereditary and native chiefs of the great tribes and territorial divisions into which the Highlands of Scotland was anciently divided. They were next in power and dignity to the king, and became the earls of later days. The term means literally a great steward, the Gaelic elements being *mor*, great, and *maer*, *maor*, a steward.

Map, a projection on a plane surface of the whole or a part of the earth's surface, showing its main features in more or less detail. The earth being a spheroid, its surface cannot be made to coincide rigorously with a plane; and it therefore becomes necessary to have recourse to a *projection*, that is, a plan on a plane surface, which indicates with sufficient correctness the relative positions, dimensions, &c., of the different parts of the spherical surface. There are five principal projections, the orthographic, the stereographic, the globular, the conical, and the cylindrical or Mercator's, distinguished from each other by the different positions of the point of projection, or that in which the eye is supposed to be placed. The last named gives a very erroneous idea of the relative size of the different portions of the earth's surface, especially towards the poles, but is very useful to mariners, in enabling them to lay off a course that can be steered by compass in straight lines. (See *Mercator's Projection*.) A nautical map is usually called a *chart* (which see). A map of the earth, or a portion of the earth, usually exhibits merely the positions of countries, mountains, rivers, lakes, cities, &c., relatively to one another, and by means of lines of latitude and longitude relatively to every other point on the earth's surface. But a map may be so coloured or shaded as to give a variety of information: for example, to indicate the geological structure, the amount of rainfall, or other meteorological phenomena, the results of statistical inquiry, the languages spoken,

&c. Hence we have geological, meteorological, linguistic, and other kinds of maps. We find traces of maps among the Egyptians in the times of Sesostri (B.C. 1618), who caused his hereditary dominions and his conquests to be represented on tablets for his people. The first attempt to draw a map of the whole known world was made by Anaximander of Miletus (B.C. 611–547). Ptolemy (flourished 126–161 A.D.) drew maps according to the stereographic projection. Agathodæmon, an artist of Alexandria, drew twenty-six maps for the geography of Ptolemy. Roman map-making is represented by the Peutinger table made about 230 A.D., which gives itineraries of the whole world known to the Romans from Britain to India. No attempt at scientific mapping was made during the middle ages, and modern map-making was identified in its early days with the names of Abraham Ortelius, Gerhard Mercator (born 1512, died 1594), William and John Blaeu (who produced 616 maps), Sanson, Schenk, Visschen, De Witt, Hondius. It is only, however, during the present century that mathematically accurate surveys and delineations of the earth's surface have been made.

Map, or **MAPES**, **WALTER**, scholar and poet of the 12th century, a native of the Welsh Marches, is supposed to have been born about 1150, and to have died about 1210. He studied at the University of Paris, and made an important figure in the court of Henry II. He became Archdeacon of Oxford in 1199; contributed to the Arthurian cycle of romance the romances of the *Quête du Saint Graal*, *Lancelot du Lac*, and the *Mort Artus*; was the author of a curious book, *De Nugis Curialium*, a notebook of the events of the day and of court gossip; and to him is attributed a collection of rhymed Latin verse, in which the abuses of the church are hit off with vigour and humour. Among the most remarkable of these are the satirical *Apocalypse* and the *Confession of Bishop Goliath*.

Ma'ple, a name for trees of the genus *Acer*, nat. order Aceraceæ or Sapindaceæ, peculiar to the northern and temperate parts of the globe. About fifty species are known, distributed through Europe, North America, and different parts of Asia. They are small or large trees, with a sweetish, rarely milky, sap, opposite deciduous, simple, usually lobed leaves, and axillary and terminal racemes or corymbs of small greenish flowers. The characteristic form of the fruit is shown

in the figure. Two species are common in Britain, the great maple, often miscalled sycamore (*A. Pseudo-platanus*), and the common maple (*A. campestre*). The wood



Sugar Maple (*Acer saccharinum*).

of the former is valuable for various purposes, as for carving, turnery, musical instruments, woodendishes, &c. Another well-known species is the Norway maple (*A. platanoides*), often planted in Britain as an ornamental tree. The wood of several American species is also applied to various uses. The sugar or rock maple (*A. saccharinum*) is the most important species; this yields maple-sugar, which in many parts of North America is an important article of manufacture. A tree of ordinary size will yield from 15 to 30 gallons of sap yearly, from which are made from 2 to 4 lbs. of sugar. The knotted parts of the sugar-maple furnish the pretty *bird's-eye maple* of cabinet-makers. Some other American species are the white maple (*A. dasycarpum*); the red or swamp maple (*A. rubrum*); the striped maple or moose wood (*A. pennsylvanicum*); the mountain maple (*A. spicatum*); the vine maple (*A. circinatum*); and the large-leaved maple (*A. macrophyllum*).

Maqui (mak'wē), an evergreen or sub-evergreen shrub found in Chili, from the juice of whose fruit the Chilians make a kind of wine. It is the best-known species of the genus *Aristotelia* (*A. Maqui*), and is referred to the nat. order Tiliaceæ (linden). It is cultivated as an ornamental shrub in England, and its fruit ripens.

Mar'abou-stork, the name given to two species of storks, the delicate white feathers beneath the wing and tail of which form the beautiful and ornamental marabou-fea-

thers. One species is a native of West Africa (*Leptoptilus marabou*), another is common in India, where it is generally called the *adjutant* (which see).

Mar'abouts, **MARABUTS**, among the Berbers of Northern Africa a sort of saints or sorcerers, who are held in high estimation, and who exercise in some villages a despotic authority. They distribute amulets, affect to work miracles, and are thought to exercise the gift of prophecy.—The name Marabouts is also used as equivalent to Almora-vides (which see).

Maracaibo (mā-rā-kī'bō), a seaport of Venezuela, on the western side of the strait which unites the lake and gulf of the same name, about 20 miles from the sea. There is a good trade in coffee, cacao, leather, hides, medicinal plants, &c. Pop. 34,284.—The Lake of Maracaibo is about 98 miles long and 80 broad at the widest part. It communicates, by a strait about 18 miles long and 3 broad, with the gulf of the same name, which is an inlet of the Caribbean Sea, 90 miles in length, and about 60 miles in width at the entrance.

Maragha, an ancient walled town in Azerbaijan, Persia, 10 miles from Lake Urumiah; famous for a fine marble which in thin plates is nearly transparent. Pop. 15,000.

Marajo (mā-rā-zhō'), an island of Brazil, formed by the estuaries of the Amazon and Pará, and belonging to the province of Pará; length, 180 miles; breadth, 125; pop. (chiefly Indians and Mestizoes), 20,000.

Maranhã (mā-rā-nyam'), or **MARANHÃO** (mā-rā-nyoun'), a province of Brazil, on the north-east coast; area, 177,566 sq. miles. A considerable part of the surface is occupied by forests, yielding excellent timber and dye-woods. The soil is very fertile, producing maize, cotton, sugar, rice, cocoa, pimento, ginger, &c. Pop. 488,443. The capital, Maranhão (San Luiz de M.), is a prosperous, well-built city on an island of the same name, carrying on a good trade in cotton, caoutchouc, hides, &c. Pop. 35,000.

Marañon. See *Amazon*.

Maranta, a genus of plants, nat. order Marantaceæ. See *Arrow-root*.

Maranta'ceæ, an order of endogenous plants, growing in tropical countries; called also *Cannaceæ*. They are perennial herbs with fibrous roots or fleshy creeping rhizomes, alternate simple leaves with sheathing footstalks, and irregular racemose or panicked flowers. The type genus is *Maranta* (arrow-root).

Maraschino (ma-ras-kē'nō), a fine liqueur distilled from a small black wild variety of cherry. The best-known kinds are the maraschino de Zara, from Zara in Dalmatia, and that from Corsica. An inferior kind is made in Germany.

Maras'mus, a wasting of the flesh without fever or apparent disease; often, however, dependent on disease of the mesenteric glands, or some obstruction in the course of the chyle.

Marat (mā-rä), **JEAN PAUL**, one of the most infamous leaders of the French revo-



Jean Paul Marat.

lution, born near Neufchâtel in 1744. He studied medicine at Paris, and previous to 1789 had spent many years in travel, visiting London, Edinburgh, Dublin, Amsterdam, &c., supporting himself by giving lessons in the modern languages, and at intervals publishing works on medical and scientific subjects. The first breath of the revolution, however, brought him to the front, and when Danton instituted the club of the Cordeliers, Marat became the editor of the *Publiciste Parisien*, better known under its later title *L'Ami du Peuple*, which was again changed to the *Journal de la République Française*, a journal which was the organ of that society, and soon became the oracle of the mob. It early advocated the most extreme measures, and the tone became more furious as Marat was inflamed by the prosecutions of the authorities. His paper was issued from various places of concealment until the 10th August, 1792, after which he took his seat at the com-

mune, and played a leading part in the assassinations of September (1792). He was a member of the terrible committee of public safety, and of the convention where General Dumouriez and the Girondists, who endeavoured at first to prevent his taking his seat, were the special objects of his attack. The establishment of the revolutionary tribunal, and of the committee for arresting the suspected, was adopted on his motions. On the approach of May 31, as president of the Jacobin Club he signed an address instigating the people to an insurrection, and to massacre all traitors. For this Marat was delivered over to the revolutionary tribunal, which acquitted him; and the people received him in triumph and covered him with wreaths. He was assassinated shortly after by Charlotte Corday, July 13, 1793. His remains were deposited in the Pantheon with national honours, but were subsequently removed.

Marathi (*ma-rät'hē*), a language of Southern India, closely allied to Sanskrit and written in the Sanskrit character. It is the vernacular of some sixteen millions of people, mostly in Hyderabad and Bombay presidency.

Mar'athon, a village of ancient Greece, in Attica, about 20 miles north-east of Athens. It was situated (probably on the site of the modern Vrana) on a plain which extends for about 6 miles along the sea-shore, with a breadth of from $1\frac{1}{2}$ to 3 miles. It is famous for the overthrow of the Persians by the Athenians under Miltiades, 490 B.C.

Marattas. See *Mahrattas*.

Marat'ti, CARLO, Italian painter and engraver, born in 1625. Louis XIV. employed him to paint his celebrated picture of Daphne. Clement IX., whose portrait he painted, appointed him overseer of the Vatican gallery. He has been styled the last painter of the Roman school. His Madonnas were particularly admired. He died in 1713 at Rome, where his chief works are to be found.

Marble, the name given to certain varieties of limestone capable of receiving a brilliant polish, and which, both from their durability and the beauty of the tints of many of them, have at all periods of the world been greatly in request for purposes of art or ornament. White statuary marble is a pure carbonate of calcium. Marbles have been divided into seven varieties or classes, viz. 1, *marbles of a uniform colour*,

comprehending solely those which are either white or black; 2, *variegated marbles*, or those in which the spots and veins are interlaced and disposed without regularity; 3, *shell marbles*, or those which are in part made up of shells; 4, *lumachelli marbles*, or those which are apparently wholly formed of shells; 5, *cipolino marbles*, or those which are veined with green talc; 6, *breccia marbles*, or those which are formed of angular fragments of different marbles united by a cement of some different colour; 7, *pudding-stone marbles*, or those which are formed of reunited fragments, like the breccia marbles, only with the difference of having the pebbles rounded in place of being angular. By ancient or *antique marbles* is understood those kinds made use of by the ancients, the quarries of which are now, for the most part, exhausted or unknown. These include Parian marble, Pentelic marble, Carrara marble (still largely quarried), *rosso antico*, *giallo antico*, *verde antico*, &c.

Marblehead, a seaport and township, United States, Massachusetts, 12 miles north-east from Boston, on a rocky point projecting into Massachusetts Bay. It has a safe and deep harbour, and is a favourite watering-place. Pop. 1890, 8202.

Marbling, in bookbinding, a process of ornamenting the edges of books by dipping them, when cut, in a trough about 2 inches deep and filled with gum-water on the surface of which coloured pigments have been thrown and disposed in various forms with a quill and comb. The colours adhering to the edge of the book are set by dashing cold water over them. Marbled papers for the sides of books are made in the same manner.

Marburg, a town of Prussia in the province of Hesse-Nassau, capital of the district of Cassel, on the slopes of an acclivity above the Lahn, 46 miles north from Frankfurt. The principal buildings are the castle of the landgraves of Hesse, now partly used as a prison; the university (about 800 students), the first founded in Germany after the Reformation; the church of St. Elizabeth (13th century), the chancery, library, and town-house. Pop. 11,225.

Mar'casite, iron pyrites or bisulphide of iron. It is of a paler colour than ordinary pyrites, being nearly of the colour of tin, and its lustre is more strongly metallic.

Marcelli'nus. See *Ammianus Marcellinus*.

Marcellus, MARCUS CLAUDIUS, a Roman general, five times consul (222, 215, 214, 210,

and 208 B.C.); the first Roman who successfully encountered Hannibal in the second Punic war; and the conqueror of Syracuse (212 B.C.). He was killed in a skirmish with the Carthaginians in 208 B.C.

March, the measured and uniform tread of a body of men, as soldiers. It may be in slow, quick, or double time, the standard for the first or parade march being 75 paces in a minute, for the second 110, for the third 150.

March, a town of England, in the county and 29 miles north-west of Cambridge, on both sides of the Old Nene. Its two principal streets cross at right angles, and are each nearly 2 miles long. Pop. 6190.

March, originally the first month of the Roman year. Till the adoption of the new style in Britain (1752), the 25th of March was the first day of the legal year; hence January, February, and the first twenty-four days of March have frequently two years appended, as January 1, 170½, or 1701-2.

Marchena (mār-chā'nà), a town of Spain, in Andalusia, province of Seville, and 30 miles east by south from the city of that name. There are sulphur springs in its vicinity. Pop. 13,768.

Marches, the frontiers or boundaries of a territory. The term is most familiar as applied to the boundaries between England and Wales, and England and Scotland. The latter were divided into three portions, the western, the eastern, and the middle marches, each of which had courts peculiar to itself, and a kind of president or governor, who was called warden of the marches. What is known as *riding the marches* is a practice still observed occasionally in some of the burghs of Scotland, the original object being to preserve in the memory of the inhabitants the limits of their property. In observing this practice the magistrates and chief men of the town, mounted on horseback, ride in procession along the boundaries of the town property, and perform various ceremonies.

Marches, THE, a territory of Italy, comprising a region lying between the Apennines and the Adriatic, and divided into four provinces — Urbino and Pesaro, Ancona, Macerata, and Ascoli.

Mar'cion, the founder of an ascetic Gnostic sect, called after him Marcionites, was born at Sinope about the beginning of the 2d century of our era, his father being bishop of Sinope. He went to Rome about 140

A.D. and founded a system which assumed the existence of three original principles — the supreme and invisible, whom Marcion called the Good; the visible God, the Creator; and the Devil, or perhaps matter, the source of evil. The Creator, the God of the Old Testament, was the author of suffering. Jesus was not the Messiah promised by this being, but the son of the unseen God, who took the form, but not the substance of man. Marcion denied the resurrection of the body; he condemned marriage, thinking it wrong to increase a race born in subjection to the harsh rule of the Creator. His sect lasted for several centuries.

Marcoman'ni, MARKOMANNI, the name of an ancient German tribe or tribal league, apparently originally marchmen or borderers on the Rhenish frontier. They subsequently migrated east, displaced the Boii from their territory (the modern Bohemia), and under their king Maroboduus formed a great Marcomannic confederacy to hinder the extension of the Roman power beyond Pannonia. Being defeated, however, by a rival confederacy composed of the Cherusci and their allies, they entered into more or less friendly relations with Rome until the time of Domitian, whom they defeated. Trajan and Hadrian kept them in check, but in 166 A.D. they invaded Pannonia, and commenced the long *Marcomannic war*. Aurelius drove them back, and Commodus purchased peace from them, but they continued to make inroads into Rhætia and Noricum, and in the reign of Aurelian penetrated Italy as far as Ancona, and even threatened Rome itself. After that, however, they practically pass out of history.

Marco Polo. See *Polo*.

Marcus Aurelius. See *Aurelius Antoninus*.

Mardin', or MARDEEN', a town of Asiatic Turkey, in the pashalic and 335 miles north-west of Bagdad, on a limestone rock, at an elevation of 2300 feet, overlooking a large and fertile plain. There is here a Jacobite monastery. (See *Jacobites*.) Pop. about 15,000.

Maree', LOCH, a Scottish lake in the west of Ross-shire, stretching south-east to north-west for 18 miles, with an average breadth not exceeding 1½ mile. It is of great depth, and its surface is studded with twenty-four wooded islands. The loch discharges itself into Loch Ewe by a small river of same name.

Marem'me, low swampy tracts of Italy, extending along the coast of Tuscany from the mouth of the Cecina to Orbitello. Formerly these regions were fruitful, healthy, and populous; but after the 15th century the neglect of the water-courses of the district allowed the formation of marshes, and now they generate tertiary fevers, and present an aspect of dreary desolation during the summer months, when the inhabitants flee from the pestilential exhalations of the soil. In winter, on the other hand, the Maremme are inhabitable, and afford a luxuriant pasturage. The Pontine Marshes and the Campagna of Rome are similar districts.

Marengo, a village in Italy, in the province of Alessandria, and so near the town of that name as to be considered one of its suburbs; celebrated for the battle of June 14, 1800, when the French under Bonaparte defeated the Austrians under Melas.

Mareo'tis, or **MARIOUT**, a lake of Lower Egypt, separated from the Mediterranean by the long narrow belt on which Alexandria stands. The main expanse is about 28 miles long by 20 broad, and lies 8 feet below the sea-level. Salt is extensively made here by evaporation.

Mare's-tail Coral. See *Isis*.

Margaret, Queen of Denmark, Norway, and Sweden, called the *Northern Semiramis*, the daughter of Waldemar III., king of Denmark; born at Copenhagen in 1353, married to Hakon, king of Norway, in 1363. The death of her husband in 1380 placed Norway in her hands; that of her son Olaf in 1387 enabled her to secure the throne of Denmark, to which she had previously brought about his election; and after defeating Albert, the Swedish king, she also obtained possession of the throne of Sweden. She endeavoured to place the union of the three kingdoms on a permanent basis by the celebrated Act of Union, or Treaty of Calmar (1397). She died in 1412, after having raised herself to a degree of power then unequalled in Europe from the time of Charlemagne.

Margaret, **SAINT**, the elder sister of Edgar Ætheling, after the Norman Conquest took refuge with her brother at the court of Malcolm Canmore of Scotland, whom she shortly afterwards married. She is said to have introduced into Scotland the higher culture of the English court, and to have effected many reforms in the Scottish church. She died in 1093. Her daughter Matilda married Henry I.

Margaret of Anjou, daughter of René, titular king of Sicily, was born at Pont-à-Mousson, in Lorraine, in 1425, and married in 1443 to Henry VI. of England. The imbecility of the king made her practically regent, and her power being contested by the Duke of York, a claimant of the throne by an elder line, the protracted wars of the Roses commenced. At first victorious she was afterwards compelled to flee to Scotland, but raising an army in the north, she secured, by the battles of Wakefield (1460) and St. Albans (1461), the death of York and the release of the king. Her army, however, was soon afterwards annihilated at Towton (1461), and Edward (IV.), the son of the late Duke of York, was declared king. She succeeded in obtaining assistance from Louis XI. of France, but was once more defeated, and took refuge in France. Warwick then became embroiled with the young king, and determined to replace Henry on the throne. Edward was in turn obliged to escape to the Continent, but obtaining assistance from the Duke of Burgundy, returned and defeated Warwick at Barnet (1471). Margaret, collecting her partisans, fought the battle of Tewkesbury (1471), but was totally defeated. She and her son were made prisoners, and the latter, when led into the presence of the royal victor, was killed. Henry soon after died or was murdered in the Tower, and Margaret remained in prison four years. Louis XI. ransomed her for 50,000 crowns, and in 1482 she died.

Margaret of Valois, Queen of Navarre, sister to Francis I. of France, was born at Angoulême in 1492. She was brought up at the court of Louis XII., and married the Duke of Alençon in 1509, became a widow in 1525, and in 1527 was espoused to Henry d'Albret, count of Béarn and titular king of Navarre. From this time she resided at Béarn, assisting in the development of the resources of the small kingdom, and making it a centre of liberal influence. Many Protestants took refuge in her territories; and her name is closely linked with those of Rabelais, Dolet, Marot, and the leading men of the period. She herself possessed no ordinary culture, being credited with a knowledge of six languages and the authorship of several works, of which the chief were *Le Miroir de l'Ame Pêcheresse*, printed in 1533 and condemned by the Sorbonne for its Protestant tendencies; the *Heptaméron*, a collection of Tales in imitation of the

Decamerone of Boccaccio, and first printed in 1559; and a collection of poems published in 1547 under the title of Marguerites de la Marguerite des Princesses. She died in 1549, leaving one child, Jeanne d'Albret, afterwards mother of Henry IV.

Mar'garine, a mixture of stearine and palmitine, obtained from beef fat, lard, &c., and formerly regarded as a single fat. The name is now applied to an imitation of butter. See *Butterine*.

Margari'ta, an island belonging to Venezuela, in the Caribbean Sea; greatest length, 37 miles; greatest breadth, about 20. Margarita was discovered by Columbus in 1498. Pop. 30,983.

Mar'gate, a seaport, municipal borough, and watering-place in England, in the county of Kent, 64 miles east by south from London, pleasantly situated at the northern extremity of the Isle of Thanet. The town, which is a favourite resort with Londoners, is in the main well laid out with fine piers and promenades. The special features of Margate are its hospitals and its hotels; the only industry of importance, as apart from the entertainment of visitors, being its sea-fishing. Pop. 1891, 18,419.

Mar'gay, a Brazilian animal of the cat kind, the *Felis Margay* or *F. tigrina*. It is about the size of the domestic cat, is of a pale fawn colour, with black bands on the fore-parts, and leopard-like spots on the hind-parts and on the long bushy tail. It has been domesticated and made very useful in rat-killing.

Mar'grave (German, *markgraf*, count of the mark), originally a commander intrusted with the protection of a *mark*, or country on the frontier. The margraves acquired the rank of princes, and stood between counts and dukes in the German Empire.

Maria Louisa, second wife of Napoleon I.; born in 1791; eldest daughter of the Emperor Francis I. of Austria. Her marriage with Napoleon took place in 1810 after the divorce of Josephine, and in 1811 she bore him a son. After his overthrow she received in 1816 the duchies of Parma, Piacenza, and Guastalla, which she governed till her death in 1847. At Napoleon's death she made a morganatic marriage with her chamberlain, Count Neipperg.

Maria'na, **JUAN**, Spanish historian, born in 1537. He entered the Society of Jesuits, and for thirteen years taught theology with distinction in Rome, Sicily, and Paris, returning to the Jesuits' College at Toledo

in 1574, but his sentiments were too liberal to make his position comfortable. Besides a history of Spain he wrote an essay *De Rege et Regis Institutione*, which was burned at Paris as countenancing the slaying of tyrants. He died in 1623.

Mariana (or **MARIANNE**) **Isles**. See *Ladrones*.

Maria Theresa, Queen of Hungary and Bohemia, Arch-duchess of Austria, and Empress of Germany, daughter of the Emperor Charles VI., was born at Vienna 1717, and in 1736 married Francis Stephen, grand-duke of Tuscany. On the death of her father in 1740 she ascended the throne of Hungary, Bohemia, and Austria, and a little later declared her husband joint ruler. Her accession was in accordance with the Pragmatic Sanction, but her claims were at once contested. Frederick the Great made himself master of Silesia; Spain and Naples gained possession of the Austrian territory in Italy; and the French, Bavarians, and Saxons marched into Bohemia, carrying all before them. Charles Albert was proclaimed Archduke of Austria, and shortly after Emperor of Germany; and the young queen fled to Presburg, where she convoked the diet and threw herself upon the sympathy of her Hungarian subjects. The French and Bavarians were speedily driven from her hereditary states; Prussia made a secret peace with the queen, who unwillingly abandoned Silesia and Glatz to Frederick; and though by the Treaty of Aix-la-Chapelle (1748) she was also compelled to give up the duchies of Parma, Piacenza, and Guastalla to Spain, her husband was elected emperor. During the time of peace which followed Maria Theresa, with the aid of her husband and the minister Kaunitz, made great financial reforms; agriculture, manufactures, and commerce flourished, the national revenue greatly increased, and the burdens were diminished. The Seven Years' war again reduced Austria to a state of great exhaustion, but on its conclusion the empress renewed her efforts to promote the prosperity of her dominions. Her son Joseph was elected king of the Romans in 1764, and on the death of her husband, in 1765, she associated the young prince with herself in the government. In 1772 she joined in the dismemberment of Poland, obtaining Galicia and Lodomeria, while in 1777 she acquired Bukowina from the Porte, and in 1779, by the Peace of Teschen, gained the Inn valley. She died

in 1780. Of the sixteen children which she bore to the emperor ten survived her, one of whom was the unfortunate Marie Antoinette.

Maria-Theresiopel. See *Theresiopel*.

Maria-Zell (mā-rē'ā-tsel), a small town of Austria in the extreme north of Styria, in the midst of mountains, near the Salza. Its celebrity is due to its possession of a handsome church, with a shrine containing a small black image of the Virgin and Child, to which numerous pilgrimage processions proceed annually from different parts of the Austrian dominions. Pop. about 1200.

Marie Antoinette. See *Antoinette*.

Marie de Medici (mā-rē dē med'i-chē), the daughter of Francis II. of Tuscany, born 1573, married in 1600 to Henry IV. of France. On the assassination of Henry she became regent, but proved utterly incompetent to rule. Her partiality for unworthy favourites caused her deposition and imprisonment. She became reconciled to her son, the weak Louis XIII., through Richelieu, who had possessed himself of the highest power, but was again imprisoned at Compiègne in 1630. Thence she escaped, and after wandering through several countries died in misery at Cologne (1642).

Marie Galante (gā-lānt), an island in the West Indies, belonging to France, 5 leagues from Guadeloupe, of which it is a dependency. The chief productions are sugar, coffee, tobacco, indigo, and cotton. Pop. 15,017, chiefly negroes.

Marienbad (mä'ri-en-bāt), one of the most frequented and picturesque of the Bohemian watering-places, about 24 miles from Carlsbad, with saline and purgative springs. Pop. 2009.

Marienburg (mä'ri-en-burh), a town in Prussia, in the government of Danzig, and 27 miles south-east of the city of that name, on the Nogat. It was once the seat of the knights of the Teutonic order, and contains the fine castle of the grand-masters. Pop. 9559.

Marienwerder (mä'ri-en-ver-dēr), a town of West Prussia, on a height near the confluence of the Vistula and Nogat, 43 miles S.S.E. of Danzig. It has an ancient and handsome cathedral and an old castle, partly used as a court-house, partly as a prison. Pop. 8238.

Mariet'ta, a town of the U. States, in Washington county, Ohio, the oldest town in the state. It is the seat of Marietta College, founded in 1835. Pop. 8273.

Mariette, AUGUSTE EDWARD, a distinguished French Egyptologist, born in 1811. He was attached to the Egyptian museum in Paris, and after successful scientific expeditions to Egypt he was appointed by the viceroy inspector-general of monuments and curator of the museum at Boulak, with the title of Bey, and latterly of Pasha. He died in 1881. His works were very numerous.

Marignano (mā-rē-nyä'nō), or MELEGNANO (mel-e-nyä'nō), a town of North Italy, 10 miles south-east of Milan; famous for the defeat of the Imperialists by Francis I. in 1515, and for a victory of the French and Italians over the Austrians in 1859. Pop. 5843.

Mar'igold, a name of several composite plants. The common marigold (*Calendula officinālis*) is a native of France and of the more southern parts of Europe. It is an annual, from 1 to 2 feet high, with large deep-yellow flowers. It is as prolific as any weed, and was formerly used in broths and soups, partly to give colour, and partly as an aromatic seasoning. It had also many medicinal virtues assigned to it. A number of species of this genus are indigenous to the Cape of Good Hope. The so-called African marigold and French marigold, common in flower borders, are both Mexican species, and have brilliant flowers. They belong to the genus *Tagētes*. The corn-marigold is *Chrysanthēmum segetum*; the fig-marigold is a *Mesembryanthēmum*; the marsh-marigold is *Caltha palustris*.

Marine Law. See *Commercial Law*, *International Law*.

Mariner's Compass. See *Compass*.

Marines, a military force drilled as infantry, whose especial duty is to serve on board ships of war when on commission, and also on shore under certain circumstances. They are trained to seamen's duties, but do not go aloft, being mainly employed in sentry duty, &c. The force was first embodied by an order in council in 1664, as a nursery for seamen to man the fleet. The United States is the only other nation which employs marines in the same manner as Britain.

Marinette, Marinette co., Wis., on Green Bay, has large saw-mills, planing-mills, &c. Pop. 1890, 11,523.

Marino, SAN, a town and small independent republic in Italy. The territory consists of a craggy tract, with an area of about 22 square miles, on the borders of the provinces of Forli and Urbino, near the Ad-

riatic coast. It is the last surviving representative of the Italian republics. At the head of the government are two 'captains regent' elected for six months. There is a militia of 950 men. The town San Marino occupies the crest of a rocky hill 2200 feet in height, and is accessible only by the road from Rimini. The principal inhabitants, however, reside in the hamlet of Il Borgo, at its foot. Pop. of the town about 1200; of republic, 7840.

Mario, GIUSEPPE, Marquis di Candia, a famous tenor, born at Turin in 1808. In 1830 he became an officer in the Sardinian army, but to escape the punishment of some youthful freak threw up his commission and fled to Paris. There in 1838, under the assumed name of Mario, he accepted an appointment as first tenor of the opera, and a year later was secured for the Théâtre Italien. For many seasons he divided his time between London, Paris, and St. Petersburg. He died in 1883.

Mariol'atry, a term applied by Protestants with a sense of opprobrium to the worship of the Virgin Mary.

Marion, FRANCIS, Revolutionary soldier, was born in Winyaw, S. C., in 1732. His career as a partisan soldier was most brilliant. He died in 1795.

Marion, Grant co., Ind., has exports of grain, lumber, and pork. Pop. 1890, 8769.

Marion, Marion co., Ohio, 40 m. N. of Columbus. Pop. 1890, 8327.

Mariotte, EDMÉ, a French mathematician and natural philosopher, born in Burgundy 1620, served as priest at St. Martin-sous-Beaune, became member of the Academy of Sciences in 1666, and died in 1684. He followed closely in the steps of Galileo and Torricelli, and made many important discoveries in hydrostatics and hydraulics. The law according to which the density of the atmosphere is regulated was discovered by him and Boyle independently. See *Boyle's Law*.

Mariput, the zoril, an animal of the genus *Viverra*, the *V. zorilla*, a species of civet.

Maritime Law. See *Commercial Law*.

Marit'za (the ancient *Hebrus*), a river of Turkey, rising in the Balkans and flowing through Eastern Roumelia, south-east to Adrianople, where it bends to the south-west, and falls into the Ægean Sea by the Gulf of Enos. It is over 300 miles long, and navigable to Adrianople, about 100 miles from its mouth.

Maritzburg. See *Pietermaritzburg*.

Mariu'pol, a town and seaport of S. Russia, in the government of Ekaterinoslav, on the Sea of Azof. Pop. 14,980.

Ma'rius, CAIUS, a Roman general, born 157 B.C., of obscure parents, at the village of Cereatæ, near Arpinum. He served with distinction at Numantia in 134 B.C. under Scipio Africanus; was made tribune of the people in 119, and acquired much popularity by his opposition to the nobles. In 115 B.C. he was appointed prætor, and a year later proprætor of Spain, which he cleared of robbers; he also increased his influence by his marriage with Julia, the aunt of Julius Cæsar. In 109 B.C. he accompanied the Consul Q. Cæcilius Metellus as his lieutenant to the Jugurthine war. He brought this war and the war in Transalpine Gaul against the Teutons to a victorious close; and was chosen six times consul. On the outbreak of the war against Mithridates, Marius, who had long been jealous of Sulla, endeavoured to deprive him of his command, and in the struggle which followed was compelled to flee from Italy. After hairbreadth escapes he landed in Africa amid the ruins of Carthage, and remained there until recalled by Cinna, who had headed a successful movement in his favour. In company with Cinna he marched against Rome, which was obliged to yield, the entry of Marius and his followers being attended with the massacre of most of his chief opponents. On the completion of the term of Cinna's consulship he declared himself and Marius consuls (B.C. 86), but the latter died seventeen days later at the age of seventy.

Marivaux (mà-rē-vō), PIERRE CARLET DE CHAMBLAIN DE, French dramatic writer and novelist, born at Paris in 1688. After writing three or four novels and a series of articles of the 'Spectator' type from 1720 onwards he produced a large number of plays, the best being the *Surprise de l'Amour* (1722), the *Jeu de l'Amour et du Hazard* (1730), and *Les Fausses Confidences* (1737). They were characterized by a certain skillfully embroidered phrasing which gave rise to the term *marivaudage*, but they have also no little charm of feeling as well as of intellectual finesse. Two uncompleted novels, *Marianne* and the *Paysan Parvenu*, contain much excellent work. He was made an academician in 1736, and died in 1763.

Mar'joram (*Origānum*), a genus of plants of the nat. order Labiatæ. The common marjoram (*Origānum vulgāre*), a native of Britain, is a perennial under-shrub, growing

among copsewood in calcareous soils. The leaves are small and acute; the flowers reddish, in clustered spikes. Sweet marjoram (*O. Majorāna*) is a biennial, cultivated in gardens. As soon as it blossoms it is cut and dried for culinary use, being employed as a seasoning.

Mark, a term formerly used in England for a money of account, and in some other countries for a coin. The English mark was two-thirds of £1 sterling, or 13s. 4d.; and the Scotch mark, or *merk*, was two-thirds of £1 Scots, or 13½d. sterling. In the coinage of the German Empire the *mark* is a coin of nearly the same value as the English shilling. A *mark banco* used to be a money of account in Hamburg equal to nearly 1s. 6d.

Mark, St., the Evangelist, according to the old ecclesiastical writers, the person known in the Acts of the Apostles as 'John, whose surname was Mark' (Acts xii. 12, 25), for many years the companion of Paul and Peter on their journeys. His mother, Mary, was generally in the train of Jesus, and Mark was himself present at a part of the events which he relates in his gospel, and received his information partly from eye-witnesses. He was the cousin of Barnabas (Col. iv. 10), and accompanied Paul and him to Antioch, Cyprus, and Perga in Pamphylia. He returned to Jerusalem, whence he afterwards went to Cyprus, and thence to Rome. He was the cause of the memorable 'sharp contention' between Paul and Barnabas. Of the close of his career nothing is known; and it is by no means certain even that the various passages, on which the church has based the biographical notes already cited, uniformly refer to the same individual. See *Gospels*.

Mark Antony. See *Antonius*.

Markets. See *Fairs*.

Markham, CLEMENTS ROBERT, English geographer and traveller, born 1830, and educated at Westminster School. He was in the navy in 1844-51, after which he travelled in Peru, and published *Cuzco and Lima* (1856). In 1860-61 he visited Peru and India in connection with the establishment of cinchona plantations in the latter country, one result being the publication of *Travels in Peru and India* (1862). In 1865-66 he visited Ceylon and India, and in 1867-68 accompanied the Abyssinian expedition, an account of which he wrote. He was made C.B. in 1871. He has held several government appointments. Other works of his are: *Life of the Great Lord*

Fairfax; *Sketch of the History of Persia*; *Peruvian Bark*; *The War between Peru and Chile*; &c.

Marking-nut (*Semecarpus Anacardium*), a tree of the cashew family, belonging to India, having a fruit that is roasted and eaten. The black juice of the unripe fruit serves to make a marking-ink.

Markirch (mār'kirh), or ST. MARIE-AUX-MINES, a town of Germany, in Upper Alsace, in a valley on both sides of the river Leber, a chief seat of the manufacture of coloured cottons. Pop. 11,407.

Marl, an earthy substance essentially composed of carbonate of lime and clay in various proportions. In some marls the argillaceous ingredient is comparatively small, while in others it abounds, and furnishes the predominant characters. The most general use of marl is to improve soils. The fertility of any soil depends in a great degree on the suitable proportion of the earths which it contains; and whether a calcareous or an argillaceous marl will be more suitable to a given soil may be determined with much probability by its tenacity or looseness, moisture or dryness. The quicker action and greater efficiency of slaked lime have in many districts led to its substitution for marl.

Marlborough, a municipal borough of England, in Wiltshire, on the Kennet, a tributary of the Thames. There is here a flourishing grammar-school, Marlborough College, opened in 1845. Marlborough was a parl. borough up till 1885. Pop. 5180.

Marlborough, a provincial district, New Zealand, occupying the north-east portion of South Island, and bounded by the sea and the provincial district of Nelson. Its extreme length is 130 miles, breadth 60 miles; area, about 3,000,000 acres. In the south of the district are the Wairau Plains, one of the finest sheep tracts in New Zealand. Capital, Picton, situated on an arm of Queen Charlotte Sound. Pop. 11,113.

Marlborough, JOHN CHURCHILL, DUKE OF, English general and statesman, second son of Sir Winston Churchill; born at Ashe, in Devonshire, in 1650. At the age of twelve he became page to the Duke of York (afterwards James II.), by whom at sixteen he was appointed an ensign. He was present at the siege of Tangiers, and soon after his return rose to the rank of captain. In 1672 he accompanied the Duke of Monmouth to assist Turenne against

the Dutch. At the siege of Maestricht he distinguished himself so highly as to obtain the public thanks of the King of France. On his return to England he was made lieutenant-colonel, and through the influence of his sister Arabella, mistress of the Duke of York, his advancement was rapid. He had a regiment of dragoons presented to him, and strengthened his influence at court by his marriage with Sarah Jennings, an attendant upon the princess, afterwards Queen Anne. In 1682 he obtained the



Duke of Marlborough.

title of Baron of Eyemouth, and a colonelcy in the guards. On the accession of James II. he was sent ambassador to France, and soon after his return was created Baron Churchill of Sundridge, and raised to the rank of general. The same year he suppressed the rebellion of the Duke of Monmouth. On the arrival of the Prince of Orange he joined him at Axminster, and was rewarded by the earldom of Marlborough, and the appointment of commander-in-chief of the English army in the Low Countries. The following year he served in Ireland, where he reduced Cork, Kinsale, and other places. In 1691 he was suddenly dismissed from all his employments and committed to the Tower on the charge of high treason, but soon obtained his release; though it appears that the suspicions against him were not without foundation. On the death of Queen Mary he was made a privy-councillor, and appointed governor to the young Duke of Gloucester; and in 1701 was created by King William commander-

in-chief of the English forces in Holland, and also ambassador plenipotentiary to the states-general. Still greater honours awaited him on the accession of Queen Anne in 1702, when he was created captain-general of all the forces at home and abroad, and sent plenipotentiary to the Hague, where he was also made captain-general by the States. In the campaign of the same year he drove the French out of Spanish Guelders, and took Liège and other towns, for which he was created Duke of Marlborough. In 1704 he stormed the French and Bavarian lines at Donauwörth, and in the same year, in conjunction with Prince Eugene, gained the victory of Blenheim over the French and Bavarians, headed by Marshal Tallard and the Elector of Bavaria. The nation testified its gratitude by the gifts of the honour of Woodstock and hundred of Wotton, and erected Blenheim Palace for him, one of the finest seats in the kingdom. During the year 1705 he conducted successful negotiations at the courts of Berlin, Hanover, and Venice, and the new emperor, Joseph, presented him with the principality of Mindelheim. On the victory of Ramillies, 1706, a bill was passed to settle his honours upon the male and female issue of his daughters. In the campaign of 1707 his antagonist was the famous Duke de Vendôme, over whom he gained no advantage, and on his return, found that his popularity at court was on the decline. In 1708, in conjunction with Prince Eugene, he gained the battle of Oudenarde. In 1709 he defeated Marshal Villars at Malplaquet, though at a cost ill repaid by the capture of Mons. On the next visit of the duke to England he found that the duchess, by her great arrogance, had so disgusted the queen that a total breach had ensued. Early in 1710 he returned to the army, and with Prince Eugene gained another victory over Villars. During his absence a new ministry, hostile to himself, was chosen, and on his return his command was taken from him, and a prosecution commenced against him for applying the public money to private purposes. He repaired in disgust to the Low Countries in 1712, but returned a short time before the queen's death, and on the accession of George I. was reinstated in the supreme military command. Retiring from all public employments, his mental faculties gradually decayed, and he died at Windsor Lodge in 1722, leaving four daughters, who married into families of the first distinction.

His duchess, Sarah Jennings, born 1660, died 1744, has been almost equally celebrated for her boundless ambition and avarice. The title fell to the descendants of one of their daughters, who have assumed the name of Churchill.

Marlborough, Middlesex co., Mass., 28 m. W. of Boston, has extensive manufactories of shoes. Pop. 1890, 13,805.

Marline-spike, an iron pin tapering to a point, and principally used on board ship to separate the strands of a rope in order to introduce the ends of some other through the intervals in the act of knotting or splicing; it is also used as a lever in various operations.

Marlow. See *Great Marlow*.

Marlowe, CHRISTOPHER, an English poet and dramatist, born at Canterbury 1564, and educated at Cambridge, whence he proceeded M.A. in 1587. He afterwards settled in London, and became an actor as well as a writer for the stage. Besides six tragedies of his own composition, the best known of which are *Tamburlaine the Great*, *Edward II.*, *Dr. Faustus*, and *the Jew of Malta*, he left a translation of *the Rape of Helen*, by Coluthus; some of Ovid's *Elegies*; the first book of *Lucan's Pharsalia*; and *the Hero and Leander* of Musæus, completed by George Chapman. He appears to have led a reckless dissipated life, and died in 1593 from a wound received in a quarrel with a serving-man at Deptford. Marlowe was by far the greatest dramatic writer before Shakspeare.

Marly, or **MARLY-LE-ROI**, a village of France, on the Seine, 10 miles west of Paris. It contained a royal castle, built by Louis XIV. and destroyed during the revolution.

Mar'malade (Portuguese, *marmelo*, a quince), a jellied preparation made from quinces, peaches, apricots, oranges, &c., and portions of their rinds, the most common kind being made from bitter or Seville oranges.

Marmalade-tree, **MARMALADE-PLUM** (*Luccima mammōsa*), a tree of the order Sapotaceæ, a native of the West Indies and tropical America, valued for its fruit, the pulp of which resembles marmalade. It is also called *Mammec-sapota*.

Mar'mala-water, a fragrant liquid distilled in Ceylon from the flowers of the Bengal quince (*Ægle Marmēlos*), and much used by the natives as a perfume for sprinkling.

Marmande (mār-mänd), a town of France,

department of Lot-et-Garonne, on the Garonne, 50 miles above Bordeaux. Pop. 9857.

Marmont (mār-mōn), AUGUSTE FRÉDÉRIC LOUIS VIESSE DE, Duke of Ragusa and Marshal of France, was born in 1774, and entered the army as a lieutenant of infantry in his fifteenth year. In 1792 he changed to the artillery, and at Toulon became acquainted with Bonaparte, who chose him for his aide-de-camp. In Italy he greatly distinguished himself, and after the battle of Marengo attained the rank of general of division. He obtained the title of Duke of Ragusa for his defence of Ragusan territory against the Russians and Montenegrins. He was present at Wagram, and after the truce of Znaim was made field-marshal. He afterwards governed the Illyrian Provinces till 1811, when he succeeded Masséna as commander in Portugal. In conjunction with Soult he raised the siege of Bajadoz, but was ultimately badly beaten at Salamanca by Wellington. In the campaign of 1813 he held the command of an army corps in Germany, and fought in the battles of Lützen, Bautzen, and Dresden. In 1814 he fought a final battle under the walls of Paris, but opposition appearing fruitless he surrendered to the allies. This proceeding was one main cause of Napoleon's immediate abdication, and brought Marmont into favour with the Bourbons. After the restoration Louis XVIII. made him a peer of France, but he was compelled to withdraw from Paris by the revolution of 1830, and his name was struck off the army list. He accompanied Charles X. in his exile, and afterwards travelled, publishing the results of his travels in 1837-39. He also wrote *Espit des Institutions Militaires* and his own memoirs. He died at Venice in 1852.

Marmontel, JEAN FRANÇOIS, a French writer, born in 1723, died in 1799. After acting as a teacher of philosophy in a seminary at Toulouse he in 1745 went by Voltaire's advice to Paris, where his tragedies *Denys le Tyran* (1748) and *Aristomène* (1749) brought him considerable celebrity. By the favour of Madame Pompadour he was appointed to a post in connection with the royal buildings. In 1761 he published his first series of *Contes Moraux* (Moral Tales). In 1763 he succeeded Marivaux as a member of the French Academy, and he was appointed historiographer of France. In 1783 he was elected secretary to the

French Academy. On the breaking out of the revolution he retired to a cottage in Normandy, where he wrote a new series of tales and Memoirs of his own Life. He also wrote *Bélisaire* (1767), *Les Incas* (1777), articles for the *Encyclopédie*, &c.

Mar'mora, or **MARMARA**, SEA OF (anciently *Propontis*), an inland sea, lying between European and Asiatic Turkey, communicating with the Mediterranean by the Dardanelles, and with the Black Sea by the Bosphorus; length from Gallipoli to the head of the Gulf of Izmid, 177 miles; greatest breadth, rather more than 50 miles. It contains several islands, of which the largest is Marmora, famous for its quarries of marble and alabaster.

Marmose, a marsupial quadruped resembling the opossum, but less, being only



Marmose (*Didelphys murina*).

about 6 inches in length exclusive of the tail; the *Didelphys murina* of Cayenne, *D. dorsigera* of Surinam. It carries its young about with it on its back.

Mar'moset, a name of several small South American monkeys, the smallest of the monkey tribe. They are agile in their movements, possess long, non-prehensile tails, and have a thick woolly fur. They bear a close resemblance to squirrels in general appearance, feed upon fruit and insects, and occasionally upon the smaller birds and their eggs. The marmoset family (*Hapalidæ*) is generally divided into two genera, *Hapalē* and *Midas*, each including a great number of distinct species, the most familiar being the Black-eared marmoset (*Hapale Jacchus*) and its varieties *H. penicillata*, *H. vulgāris*, &c. These are also known by the name of *Ouistiti*.

Marmot, a rodent quadruped of the genus *Arctomys*, classed with the Squirrels. They are thick-bodied, have short tails and short legs, and live in burrows, which are generally excavated in mountainous situations, and consist of a series of galleries in which whole

communities reside. During the winter they lie dormant. The marmots inhabit Europe, Northern Asia, and North America. The Alpine or European Marmot (*Arctomys Alpinus*) is found in plenty on the Alps, and averages a rabbit in size. The prairie-dog or prairie-marmot, or wistonwish, of North America (*Cynomys Ludoviciānus*) is the most familiar American species. Another species found in America is the woodchuck of the middle American states (*A. monax*).

Marne (märn; Latin, *Matrōna*), a river of France, the largest tributary of the Seine on the right, rises in the department of Haute-Marne, and enters the Seine about 3 miles above Paris. It has a course of about 280 miles, of which 210 miles are navigable.

Marne, a department of France, bounded by Ardennes, Aisne, Seine-et-Marne, Aube, Haute-Marne, and Meuse; 67 miles long by 60 miles broad; area, 3158 square miles. About two-thirds of it is arable, and the crops, chiefly rye and oats, more than supply the consumption. The vine is largely cultivated; but though the champagnes of Rheims and Épernay are famous the general produce of the vineyards is indifferent. Châlons-sur-Marne is the capital. Pop. 1891, 434,692.

Marne, **HAUTE** (Upper Marne), a department of France, bounded by Meuse, Marne, Aube, Côte d'Or, Haute-Saône, and Vosges; area, 2401 square miles. Ramifications of the Vosges make the greater part of the surface mountainous, and the elevated plateau of Langres in the department forms part of the great European watershed. The principal rivers are the Marne, with its tributaries, and the Meuse. The ordinary agricultural crops equal the consumption, and the wine is partially exported. The forests are extensive, and furnish fuel for smelting the ironstone of the department. The coal-measures are partially developed, but the prevailing rock is Jura limestone. Chaumont is the capital. Pop. 1891, 243,533.

Marocco. See *Morocco*.

Mar'onites, a sect of eastern Christians, whose origin was a consequence of the Monothelite controversy. (See *Monothelites*.) On the condemnation of the Monothelites by Anastasius, early in the 8th century, the remnant of this party survived in the *Maronites*, so named from their founder Maron—a society of monks in Syria, about Mount Lebanon, which is mentioned as early as the 6th century. They became a warlike moun-

tain people, who defended their political and religious independence boldly against the Mohammedans. Their political constitution is that of a military commonwealth. Since the 12th century they have several times submitted to the pope and joined the Roman Catholic Church, without giving up their own peculiarities. Their head is called the *Patriarch of Antioch*, although his residence is in the monastery of Kanobin, upon Mount Lebanon; and he gives an account every ten years to the pope of the condition of the Maronite Church. Since 1584 there has been a Maronite college established at Rome for the education of clergymen. At present the Maronites are supposed to number about 150,000. In consequence of the sanguinary conflicts between the Maronites and Druses, June 1860, both communities are now subject to one governor appointed by the Porte, with the title of governor of the Lebanon. See *Druses*.

Maroons', the name given to runaway negroes in Jamaica and in some parts of South America. In many cases they rendered themselves formidable to the colonists. When Jamaica was conquered by the English in 1655 about 1500 slaves retreated to the mountains, and continued to harass the island till 1795, when they were reduced by the aid of blood-hounds.

Maros (mä'rosh), a river of Hungary which enters the Theiss at Szegedin after a course of 400 miles.

Maros-Vasarhely (mä'rosh-vä-sär-hely), a town of Transylvania, on the Maros, in a beautiful and fertile district, 54 miles N.N.E. of Hermannstadt. Pop. 12,843.

Marot (mä-rō), CLEMENT, a French epigrammatist and writer of light lyrical pieces, born at Cahors 1495. He went to Paris as page of Margaret of France, duchess of Alençon, whose brother Francis I. he afterwards accompanied to the Netherlands. In 1525, having followed the king to Italy, he was wounded and made prisoner in the battle of Pavia. After his return to Paris he was suspected, possibly on the charge of his mistress Diana of Poitiers, of being favourable to Calvinism, and was thrown into prison. During his confinement he wrote *L'Enfer*, a satire on his judges; and a modernized edition of the Romance of the Rose; and the king finally set him at liberty. His connection with Margaret, now Queen of Navarre, with whom he had quarrelled, was renewed, but he soon went to Italy, and thence to Geneva (1543), where Calvin

succeeded in making him a nominal proselyte. He recanted, however, and returned to Paris; but being again in danger as a suspected heretic, he fled to Turin, where he died in poverty in 1544. His translation of the Psalms, made in conjunction with Beza, was long used in the Protestant churches in France, though his own life was marked by complete religious indifference. The combination of satirical humour, naïveté, and delicacy exhibited in his works is known as the *Style Marotique*, of which La Fontaine furnishes the best subsequent examples.

Marque, LETTERS OF, or LETTERS OF MARQUE AND REPRISAL, a license or extraordinary commission granted by a sovereign or the supreme power of one state to the citizens of this state to make reprisals at sea on the subjects of another, under pretence of indemnification for injuries received; that is, a license to engage in privateering. Letters of marque were abolished among European nations by the Treaty of Paris of 1856. The United States of America were invited to accede to this agreement, but declined.

Marquesas (mär-kā'sās; Fr. *Marquises*), an island group in the South Pacific Ocean, lat. 8° to 11° s.; lon. 138° 30' to 143° w., belonging to France, composed of twelve islands and islets. Their coasts are generally inaccessible, rising from the water like walls; but in Nukahiva, the largest, there are one or two excellent natural harbours. Hiva-oa is the next in size. Some of their mountains reach an elevation of about 3500 feet; the intervening valleys are singularly fertile and picturesque. Their principal productions are yams, bread-fruit, and coconuts. Hogs are numerous, and cattle have been introduced. The men are well-formed and powerful, generally tattooed; the women are the finest of the sex in Polynesia. The people were formerly cannibals. The Marquesas were discovered in 1595. Pop. about 6000.

Mar'quetry (Fr. *marqueterie*), inlaid cabinet-work in which thin slices of different coloured wood, sometimes of ivory, pearl, shell, or metal, are inlaid on a ground usually of oak or fir, well seasoned to prevent warping.

Marquette, Marquette co., Mich., principal shipping-port of the great iron region. Pop. 1890, 9093.

Marquis, MARQUESS (Fr. *marquis*; Ital. *marchese*; Ger. *markgraf*), a title of honour next in dignity to that of duke, first given

to those who commanded on the marches or frontiers of countries. The title was first introduced into England by King Richard II. in the year 1387, but fell into disuse until the reign of Edward VI., who created the Marquisate of Winchester in 1551. The corresponding female title is *marchioness*.

Marriage, a solemn contract between a man and woman, by which they are united for life and assume the legal relation of husband and wife. Different localities have different forms of the institution, the most broadly marked of which are connected with the right to have only one wife—*monogamy*, or a plurality of wives—*polygamy*. *Polyandry*, by which a woman may have several husbands, is known to have existed in ancient times, and still exists in various localities, as in Tibet. Among the most civilized communities monogamy is the prevailing practice. Though the Church of Rome ranks marriage among the sacraments, and religious observances are almost everywhere customary on its celebration, the law regards it as nothing more than a civil contract. To render valid the civil contract constituting marriage in England it is requisite that the free-will of each of the parties should be spontaneously exercised, and that each should be capable of giving an intelligent consent. In males the age of consent is fourteen, and in females twelve. A promise to marry given by a person under twenty-one is not binding. The legal disabilities are: (1) An undissolved prior marriage, and the former husband or wife still living. (2) Being within the prohibited degrees of consanguinity or affinity, cousins-german being the nearest relatives that may marry. Marriage with a wife's sister is prohibited as with one's own sister. (3) Impotence or inability to consummate the marriage. (4) The fraudulent suppression or alteration of the name of one or both in the publication of the banns; but this does not invalidate a marriage by license. Banns of marriage must be published three Sundays in the parish church or public chapel of the Establishment, in the parish wherein both parties reside, or in the parishes in which each separately resides. Ordinarily marriages must be celebrated in a church by a clergyman of the Church of England, or by a dissenting minister or a Roman Catholic priest in a building registered for marriages and in presence of the registrar, or they may be celebrated before the registrar and in his office; the hours between which all mar-

riages must take place being 8 A.M. and 3 P.M. There is no restriction as to time or place of marriage where a special license has been obtained. Theoretically, special licenses are to be granted only on special grounds or to persons of a specified rank, but practically this restriction does not exist. They are obtained from the Archbishop of Canterbury, and cost £29, 8s. In Scotland marriage is a civil contract completed by consent alone. As regards the ceremony, it may be either regular, clandestine, or by mere consent, without the intervention of a clergyman. A clandestine differs from a regular marriage in not being preceded by the publication of banns. Consent without *copula*, or a promise to marry followed by *copula*, constitutes a marriage in Scotland. An acknowledgment in writing, or even orally, may constitute a marriage. Cohabitation infers marriage if the parties are habit-and-repute husband and wife. No irregular marriage is valid unless one of the parties has, at the date of the marriage, his or her usual place of residence in Scotland, or has lived there for twenty-one days preceding the marriage. The law of marriage in Ireland is practically identical with that of England, except where a Protestant marries a Roman Catholic. In most of the British colonies the marriage law differs somewhat from the English, especially as regards the legality of marriages with a deceased wife's sister. (See *Deceased Wife's Sister*.) In the United States marriage is regarded as being entirely based on contract or on the present mutual consent of the parties; solemnization by a clergyman or by a magistrate, the presence of witnesses, and all the customary forms and ceremonies being simply convenient means of perpetuating the evidence of the contract. Marriage with a deceased wife's sister is not prohibited. The age at which a marriage may be contracted is the same as in England.

Married Women's Property Act, 1882. See *Husband and Wife*.

Marrow. See *Medulla*.

Mar'ryat, FREDERICK, English novelist and naval officer, born in 1792. In 1806 he entered the navy as midshipman on board the *Impérieuse*, commanded by the celebrated Cochrane, afterwards Lord Dundonald; and having served with distinction and attained the rank of captain he retired in 1830. His first attempt in literature was made in 1829, by the publication of Frank Mildmay. Its success led to an extensive

series of works of the like kind, including *The King's Own*, *Peter Simple*, *Jacob Faithful*, *Japhet in Search of a Father*, *Newton Forster*, *Midshipman Easy*, *The Pacha of Many Tales*, *The Poacher*, *The Phantom Ship*, *Snarley-Yow or the Dog Fiend*, *Perceival Keene*, *Masterman Ready*, *Poor Jack*, and others. He was also the author of a *Code of Signals for the Merchant Service* (1837). Captain Marryat's novels are remarkable for broad humour and fidelity of description as regards sea life, but he cannot be said to be a great master of plot. He died at his residence, Langham, Norfolk, in 1848. One of his daughters, Florence Marryat, has gained distinction as a novelist.

Mars, the Roman god of war, at an early period identified with the Greek *Arēs*, a deity of similar attributes. Like Jupiter he was designated *father*, and was regarded in particular as the father of the Roman people, Romulus and Remus being the fruit of his intercourse with Rhea Sylvia. Several temples at Rome were dedicated to him. His service was celebrated not only by particular *flamines* devoted to him, but by the College of the *Salii*, or priests of Mars. The month of March, the first month of the Roman year, was sacred to him. As the tutelary deity of Rome he was called *Quirinus*, in his character as the god of war *Gradivus* (the striding). Ares, the Greek god of war, was the son of Zeus (Jupiter) and Hera (Juno). He is represented as terrible in battle, but not as invulnerable, since he was wounded at various times by Heracles, Diomedes, and Athena. He is represented as a youthful warrior of strong frame, either naked or clothed with the chlamys. The chief seats of the worship of Ares were in Thrace and Scythia.

Mars, of the superior planets that which lies nearest the sun, or next beyond the orbit of the earth. He moves round the sun in 686·9797 of our mean solar days, at the average distance of 139,312,000 miles, his greatest and least distances being 152,284,000 and 126,340,000 miles; his orbit is inclined to the ecliptic at an angle of 1° 51' 5"; his distance from the earth varies from about 35,000,000 to 244,000,000 miles; he rotates on his axis in 24 hours 37 minutes 22 seconds; the inclination of his axis, or the angle between his equator and his orbit, is 28°; his diameter is about 4400 miles. His surface resembles that of the earth; but the seas, as the parts which have a greenish tinge are thought to be, cover a much smaller

area than the reddish parts or land. The reddish hue of Mars is one of his characteristic features. About every 8 years 7 months he is in perihelion and perigee at the same time, and has a wonderful brilliancy. At his poles are white portions, which decrease and increase in size at the beginning and end of the Martial summer, so that the poles are supposed to be surrounded with snow. In 1877 two satellites, both very small bodies, were discovered by Professor Hall of the Naval Observatory, Washington. The outer one, 14,500 miles distant from the centre of Mars, revolves round the planet in a period of 30 hours 14 minutes: the inner one, 5800 miles from the centre of Mars, has a period of 7 hours 38 minutes.

Mars, ANNE FRANÇOISE HYPPOLITE BOUTET, French actress, born at Paris in 1779. As *Célimène* in Molière's *Misanthrope*, and *Elmira* in *Tartuffe*, as well as in several similar characters in the plays of Marivaux, she was absolutely perfect. Louis XVIII. settled on her, as well as on Talma, a pension of 30,000 francs. She quitted the stage in 1841, and died at Paris in 1847.

Marsa'la, a seaport of Sicily, on the promontory of Cape Boeo, 18 miles s.s.w. of Trapani. The principal edifice is a large cathedral. The harbour has been so silted up as to admit only small vessels. See *Lilybæum*. Pop. 19,732.

Marsden, WILLIAM, oriental scholar, born in Dublin in 1754, was sent out early in life to Sumatra, in the East India Co.'s service, and returned to England in 1779. In 1795 he became chief secretary to the admiralty, retiring in 1807. Among his works are: the *History of Sumatra*; a *Dictionary of the Malayan Language*; a *Grammar of the Malayan Language*; *Translation of the Travels of Marco Polo*, with a commentary; and *Numismata Orientalia*. He died in 1836.

Marseillaise Hymn (mār-se-lāz'), the war-song of the French Republic. The words, and, as is generally believed, the music, were written in 1792 by Rouget de l'Isle, an officer in garrison at Strasburg, on the occasion of a body of volunteers leaving that city for the war against Austria and Prussia, and the poem was entitled by him *Chant du Guerre de l'Armée du Rhin* (War-song of the Army of the Rhine). It was called *Marseillaise* because first sung in Paris by volunteers from Marseilles.

Marseilles, French MARSEILLE (mār-sālz'. mār-sā-yè; Latin, *Massilia*), a city and the

principal commercial seaport of France, on the Mediterranean, capital of the department of Bouches-du-Rhône. It is situated on the north-eastern shore of the Gulf of Lyons, and lies in the form of an amphitheatre round a natural harbour of moderate size now known as the Old Harbour. From the inner end of the harbour runs inland one of the finest of the city thoroughfares, called the *Cannebière* next the harbour, while at right angles to this another great thoroughfare or broad avenue runs through the city. Though a handsome city as a whole, Marseilles is not rich in public edifices. The most deserving of notice are the large new cathedral in the Byzantine style; the church of Notre Dame de la Garde, on a hill of same name; the church of St. Victor; the Hôtel de Ville; the Prefecture; the Palais des Arts de Longchamp, with picture-gallery and natural history museum; the exchange; public library (100,000 vols.); and the triumphal arch through which the town is entered on the side of Aix. The harbour is strongly defended by various works. What is called the New Harbour consists of a series of extensive docks along the shore to the west, with a protecting breakwater in front. In recent times Marseilles has made great progress in its extent, street improvements, population, and commerce, largely owing to the conquest of Algeria and the opening of the Suez Canal. The most important manufactures are soap, soda, and other chemical products; also olive and other oils, sugar, machinery, iron and brass work, candles, glass, earthenware, &c. The trade is chiefly in soap, olive-oil, wine, brandy, corn, flour, dried fruits, tobacco, wool, skins, iron, cotton, &c.—Marseilles was founded by a colony of Greeks from Asia Minor about 600 years before Christ, the original name being Massalia. It attained great prosperity as a Greek colonial centre, and the Greek language is said to have been spoken here till several centuries after Christ. It was taken by Cæsar in B.C. 49. On the decline of the Roman Empire it became a prey to the Goths, Burgundians, and Franks. In 735 it fell into the hands of the Saracens, and in the 10th century it came under the dominion of the counts of Provence, and for some centuries after followed the fortunes of that house. Pop. 1891, 403,749.

Marsh, GEORGE PERKINS, American scholar and diplomatist, born 1801. He graduated at Dartmouth College, studied law, and practised at the bar. In 1842–49 he was

a member of Congress, and in 1851 American minister at Constantinople. From 1861 till his death in 1882 he was American minister to Italy.

Marsh, OTHNIEL C., naturalist, born in Lockport, N. Y., in 1831. He has devoted himself to the investigation of extinct vertebrate animals. Since 1883 has been President of National Academy of Sciences.

Marshal, French *MARÉCHAL*, a word of German origin signifying originally a man appointed to take care of horses. A similar term is the French *connétable* or constable, from L. *comes stabuli* (count or master of the stable). The marshal of the German Empire derived his origin from the Frankish monarchs, and was equivalent to the *comes stabuli* or *connétable*. He had to superintend the ceremonies at the coronation of the emperor, and on other high occasions. There is still a marshal at the head of the households of German sovereigns. In France *maréchal de France* is the highest military honour. In Germany *general-field-marshal* is the highest military honour. In the United States a marshal is an executive officer (resembling the sheriff) connected with the United States courts.

Marshall, JOHN, jurist, born in Germantown, Va., 1755. At the age of forty-one he was at the head of the Virginia bar and in the branches of international and public law had no superior in the country. As Chief-Justice of the Supreme Court of the U. S. his decisions are regarded as the standard authority on constitutional questions. He died in 1835.

Marshall, capital of Harrison co., Texas, 16 miles south of Jefferson, has various factories. Pop. 1890, 7207.

Marshalltown, Marshall co., Iowa, in the centre of a fine agricultural region, has considerable grain trade. Pop. 1890, 8914.

Mar'shalsea, formerly one of the London prisons in Southwark, set apart for the detention of debtors and certain other persons.

Marsh-elder. See *Guelder-rose*.

Marsh-gas. See *Fire-damp*.

Marsh-harrier, a British bird of prey. It is sometimes called the *Moor-buzzard*.

Mars' Hill. See *Arcopagus*.

Marsh-mallow, *Althæa officinālis*, a common European plant, growing in marshes, especially near the sea, in great abundance. It is employed medicinally as a demulcent, and is the *guimaure* of the French, used in the preparation of demulcent lozenges. It is perennial, and has a white, fleshy, car-

rot-shaped root, which may be used as food. The stem is from 2 to 3 feet high, both leaves and stem being covered with a soft down. The flowers are flesh-coloured. The hollyhock (*A. rosea*) is another species.

Marshman, JOSHUA, an English missionary, born in 1768, and sent in 1799 by the Baptist Missionary Society to Serampore, where he had Carey, Ward, and others as fellow-labourers. He translated a great portion of the Bible into Chinese, published the original text and a translation of the works of Confucius (1811), a Chinese grammar (1814), and with Carey a Sanskrit grammar (1815) and a Bengali-English Dictionary (1825). He died at Serampore in 1837.—His son, **JOHN CLARK MARSHMAN** (1794–1877), founded the first English weekly newspaper in India, the *Friend of India*, besides being the author of a popular *History of India*, *Lives of Carey, Marshman, and Ward*, and *Memoirs of Havelock*, his brother-in-law.

Marsh-marigold (*Caltha palustris*), a plant of the natural order Ranunculaceæ, is a common wild plant found in meadows and by the sides of wet ditches. It has kidney-shaped, shining leaves, and large yellow flowers, and partakes of the acidity common to the order.

Marsh-rosemary, the North American name for *Statice Limonium*, a salt-marsh plant of North America and Europe, the root of which is a strong astringent, and sometimes used in medicine.

Marsh-samphire, a leafless, much-branched, jointed, succulent plant, *Salicornia herbacea*, found on muddy or moist sandy shores, and frequent in England and Ireland. It is eaten by cattle, and makes a good pickle. It is also named *Glasswort* and *Saltwort*.

Marsipobranchii (Gr. *marsipos*, a pouch, and *branchia*, gills), the order of fishes comprising the hag-fishes and sea-lampreys, with pouch-like gills. The organization of these fishes is of a very low grade, as indicated chiefly by the persistent notochord without ossified vertebral centra, the absence of any traces of limbs, the absence of a mandible and of ribs, and the structure of the gills.

Marston, JOHN, an English dramatic author, of the reigns of Elizabeth and James I.; educated at Corpus-Christi College, Oxford. He was entered at the Middle Temple, of which society he became lecturer, and died after 1633. He was the author of eight plays, all acted at the Black Friars the-

atre with applause. Six of these were printed in one volume in 1633, and dedicated to the Viscountess Falkland. He assisted Ben Jonson and Chapman in the composition of *Eastward Hoe*. He also wrote three books of satires, entitled the *Scourge of Villany* (1599).

Marston, PHILIP BOURKE, English poet, son of Westland Marston, born in London 1850. He became blind in his fourth year, and to this the introspective and morbid character of much of his work must be attributed. His poems were collected at various times in the volumes entitled *Song-tide* (1870), *All in All* (1875), and *Wind Voices* (1883). He also wrote critical papers and novelettes. A selection of the stories was published after his death under the title *For a Song's Sake*. He died in 1887.

Marston, WESTLAND, English poet and dramatist, born at Boston in 1820, died 1890. He went to London to study law, but devoted himself to literature, his first tragedy, *The Patrician's Daughter*, being produced at Drury Lane in 1842 by Macready, Phelps, and Helen Faucit. Of his many subsequent plays (collected in two volumes in 1876) the best known are *Strathmore* (1849), *Ann Blake* (1852), and *Life for Life* (1868). He is also the author of several lyrical compositions, some short stories collected in 1861 under the title of *Family Credit*, and a novel, *A Lady in her own Right*, published in 1860.

Marston Moor, in Yorkshire, about 7 miles west of York, a locality celebrated for the battle between the royal forces under Prince Rupert and the troops of the Parliament under Fairfax and Cromwell (2d July, 1644), in which the latter were victorious.

Marsupia'lia, or MARSU'PIALS (L. *marsupium*, a pouch), an extensive group of mammalia, differing from all others in their organization, and including genera which correspond to several orders of ordinary mammals. They belong to the aplacental mammals, and their most striking peculiarity is the production of the young in an immature state, a feature which renders necessary the pouch in which the immature young are placed immediately on their birth. In this pouch are the mammaræ or teats, and sheltered here the imperfect young ones, attached to the nipple by the mouth, remain till fully developed. The marsupials link the mammals through the Monotremata (which see), to the birds and reptiles. There

are many genera both herbivorous and carnivorous, the great bulk of them being confined to the Australian region. The kangaroo and opossum are familiar examples. The Marsupialia are divided into the following sections—*Rhizophaga* (root-eaters), including the rodent-like wombat; *Pocephaga* (grass-eaters), including the kangaroos, and kangaroo-rats or potoroos, all strictly plant-eaters; the *Carpophaga* (fruit-eaters), of which the typical group is the phalangers, the best known being the Australian opossum; the *Entomophaga* (insect-eaters), in which are the American or true opossum, the bandicoots, and the banded ant-eater; *Sarcophaga* (flesh-eaters), of which the best known are the 'Tasmanian wolf' and 'Tasmanian devil.'

Mar'syas, a personage in Greek mythology, who is said to have challenged Apollo to a trial of skill in flute-playing, and, being beaten, was flayed alive by the god.

Martaban', a small town in Burmah, at one time seat of the Burmese government, on the right bank and near the mouth of the Salwen River, captured by the British in 1824, and again in 1852.

Mar'tagon, a kind of lily, *Lilium Martagon*, the bulbs of which are eaten by the Cossacks.

Martel-de-fer, an ancient weapon having a kind of cross-head forming at one end a pick, and at the other a hammer, axe-blade, half-moon, or other termination.

Martello-towers, the name (of doubtful origin) given to small circular-shaped forts with very thick walls, chiefly built to defend the seaboard. A number of such towers were built on the British coasts, especially in the south, in the time of Napoleon I. They are in two stages, the basement story containing store-rooms and magazine, the upper serving as a casemate for the defenders; the roof is shell-proof. The armament is a single heavy traversing gun.

Marten, the name of several carnivorous quadrupeds of the genus *Mustela* or *Martes*, family Mustelidæ (weasels). The body of the marten, like that of the weasel, is elongated and slender. The legs are short, the feet being provided with five toes, armed with sharp claws. In habit the martens differ from the weasels in being arboreal, these forms climbing trees with great ease. The common marten (*Martes (Mustela) foina*) is found in Britain and Europe generally, as also is the pine-marten (*M. abietum*), although the latter is rarer in Britain. They

feed on the smaller wild animals, such as rats, mice, &c., but also attack birds and devour eggs. The pine-marten occurs chiefly in North America and in the northern parts of Asia. It is of smaller size than the common marten, possesses a yellowish mark on



Pine-marten (*Mustela Martes* or *Martes abietum*).

the throat, and has a finer fur largely used for trimmings. It burrows in the ground. The famous sable marten (*M. Zibellina*), which furnishes the valuable sable fur, is nearly allied to the pine-marten. It inhabits Siberia. The American sable is furnished by the *M. leucopus*; and Pennant's marten (*M. canadensis*), or the *fisher*, as it is popularly called, is another well-known species.

Martha's Vineyard, the principal island of Dukes co., Mass., 12 miles west-north-west of Nantucket, 19 miles long, and from 2 to 10 broad. It contains several towns and seaside resorts.

Martial, in full MARCUS VALERIUS MARTIALIS, Roman writer of epigrams, was born at Bilbilis, in Spain, A.D. 43, and educated at Calagurris (*Calahorra*), the birthplace of his friend Quintilian. He went to Rome when young, during the reign of Nero, and lived under Galba and the following emperors. Domitian gave him the rank of tribune and the rights of the equestrian order. In 100 A.D. he returned to Spain to his native city, and died there not earlier than 104 A.D. His celebrity is founded on fourteen books of epigrams, which for the most part depict with no less good sense than pungent wit the life of imperial Rome.

Martial Law, the law by which the discipline of an army is maintained, applying only to persons in actual military service, and only to their conduct in such service. The jurisdiction under the law martial is in a distinct tribunal, known as a court-martial appointed by some superior officer. Under special circumstances of insurrection

MARTIN.

or rebellion, where the ordinary law is insufficient to protect life and property, it is sometimes necessary to administer the law according to the practice of military courts, by an armed force occupying the disturbed district. The district is then said to be under martial law.

Martin, a name applied to several birds of the genus *Hirundo* or swallows. The one best known is the *H. urbica*, or house-martin, a familiar British bird, which builds a globular nest under the eaves of houses, or



House-martin (*Hirundo urbica*).

in the upper angles of windows. In habits it resembles the chimney-swallow, but its tail is less markedly forked, while its nest also differs, that of the chimney-swallow being cup-shaped. See *Swallow*.

Martin, JOHN, English historical and landscape painter, born at Haydon, near Hexham, in 1789. He was apprenticed to a coachmaker in Newcastle, to learn heraldic painting, and removed in 1806 to London, supporting himself there by painting on glass and on china, and by teaching, while diligently studying the higher branches of art. At the age of nineteen he married. His first picture, entitled *Sadak in Search of the Waters of Oblivion*, was exhibited in 1812. This was followed by *Paradise*, *The Expulsion from Paradise*, *Clytie*, and *Joshua commanding the Sun and Moon to Stand Still* (1816). *The Fall of Babylon* (1819) excited great attention, and *Belshazzar's Feast* (1821) obtained the prize of £200 at the British Institution. Among Martin's subsequent pictures may be mentioned *The Destruction of Herculaneum* (1822), *The Seventh Plague*, *The Creation*, *The Fall of Nineveh* (1828), *The Deluge* (1837), *The Celestial City and River of Bliss*, *Pande-*

monium, *Morning and Evening*, *The Valley of the Thames from Richmond Hill*, *The Last Judgment*, *The Great Day of Wrath*, and *The Plains of Heaven*. He died in 1853. Martin also executed a series of illustrations of the Bible and for Milton's *Paradise Lost*. Many of his pictures were engraved in mezzotinto by himself. His works display much grandeur of conception and atmospheric effect. They are for the most part landscapes with figures rather than historical paintings in the ordinary sense of the term.

Martin, St., **ST. MARTIN OF TOURS**, was born of heathen parents in Pannonia about the year 316. He served under Constantius and Julian, and went to Gaul. Among other virtuous and benevolent acts he divided his cloak with a poor man whom he met at the gates of Amiens (Ambianum). The legend says that Christ appeared to him in the following night covered with the half of this cloak. Soon after this vision Martin was baptized, in 337. After living many years in retirement he visited his native place, and converted his mother. About the year 375 he was chosen against his will Bishop of Tours. In order to withdraw himself from the world he built the famous convent of Marmoutiers, and is said to have died about the year 400. He was the first saint to whom the Roman Church offered public adoration. His festival takes place on the 11th of November. See *Martinmas*.

Martin, St., one of the Leeward Islands, West Indies, between the islands of Anguilla and St. Bartholomew, belonging partly to the French and partly to the Dutch; area, 30 square miles. From the salt-water lagoons in the south quantities of salt are obtained. The climate is considered healthy. Nearly all the inhabitants are English. Pop. 6600.

Martin, SIR THEODORE, K.C.B., LL.D., man of letters, born at Edinburgh in 1816, educated there at the High School and university, settled in London in 1846 as solicitor and parliamentary agent. In 1851 he married Miss Helen Faucit, who had played *Iolanthe* in his successful version of Hertz's *King René's Daughter*. He was joint-author with Professor Aytoun of the *Bon Gaultier Ballads*, and has published many volumes of translations in verse—the *Poems and Ballads of Goethe* (1858), *Dramas by H. Hertz and Oehlenschläger* (1854–57), *The Odes of Horace* (1860), *Poems of Catullus* (1861), *Dante's Vita Nuova* (1862), *Goethe's*

Faust (the first part, 1865), a complete translation of Horace (1882), Goethe's Faust (second part, 1886), &c. He is also the author of the Life of Professor Aytoun (1867), and of the Life of the Prince Consort (5 vols. 1874-80), the materials for the latter having been supplied by her Majesty. It was on the completion of the Prince Consort's Life in 1880 that he was knighted and made K.C.B. In the same year he was elected rector of St. Andrew's University.

Martin's Ferry, Belmont co., Ohio, 2 m. above Wheeling. Manuf. glass, iron, and mill machinery. Pop. 1890, 6250.

Martineau (mār'ti-nō), HARRIET, English authoress, of French Huguenot descent, born at Norwich 1802, died at Ambleside 1876. Her first work, Devotional Exercises for the Use of Young Persons, appeared in 1823. Next came a number of stories, mostly intended to inculcate some useful lesson, such as those having the title of Illustrations of Political Economy (1831-34), which were followed by Illustrations of Taxation and Poor Laws and Paupers. In 1834 Miss Martineau visited the United States, after returning from which she published Society in America, and A Retrospect of Western Travel. In 1839 and 1840 appeared Deerbrook and The Hour and the Man, two novels, the first of which especially acquired a wide popularity. In 1848 she issued Eastern Life, Past and Present, the result of a visit made by her to the East in 1846. Up to about this time Miss Martineau had been known as a Unitarian, but she now showed a decided leaning towards Positivism, and in 1853 published a condensation of Comte's Positive Philosophy. Among her other works of importance may be mentioned her History of England during the Thirty Years' Peace. During the last twenty years of her life her writings consisted mainly of pamphlets and contributions to newspapers and periodicals. A remarkably candid autobiography which had been written for many years was published after her death, with some additions by a friend (Mrs. Chapman). For her brother James see next article.

Martineau, JAMES, Unitarian minister and philosophical writer, a younger brother of Harriet Martineau, was born at Norwich in 1805, educated at the Norwich Grammar School, Dr. Lant Carpenter's school at Bristol, and Manchester New College, York. After holding ministerial appointments in Dublin and Liverpool, he became in 1841

professor of mental and moral philosophy in Manchester New College. In 1857 he removed to London, and was minister of Little Portland Street chapel from 1859 to 1872. In 1868 he was appointed principal of Manchester New College (which from 1853 had been in London). He is the author of The Rationale of Religious Inquiry (1837), Endeavours after the Christian Life (2 vols. 1843-47), Miscellanies (1852), Studies of Christianity (1858), Essays Philosophical and Theological (1868), Modern Materialism (1876), Hours of Thought on Sacred Things (2 vols. 1876-80), A Study of Spinoza (1882), Types of Ethical Theory (1885), A Study of Religion (2 vols. 1887).

Martini-Henry Rifle. See *Rifle*.

Martinique (mār-ti-nēk'), one of the French West India Islands, in the Windward group, 30 miles south by west of Dominica and 20 miles north of St. Lucia. It is of irregular form, high and rocky, about 45 miles long and 10 to 15 broad; area, 380 square miles. Its loftiest summit, Mount Pelée, is 4450 feet high. The climate is hot, but not unhealthy. Hurricanes and earthquakes are not unfrequent. About two-fifths of the island are under cultivation, with sugar-cane, manioc, yams, bananas, sweet-potatoes, coffee, and cacao. The mountain slopes are in most parts covered with primeval forests. Numerous streams flow down from the heights. There are several good harbours, the best of which is Port Royal, on the south-western side of the island. The principal town is St. Pierre, on the north-western side. Since 1870 Martinique has sent two deputies to the National Assembly of France. The island was discovered by the Spaniards on St. Martin's Day in 1493, when it was peopled by Caribs. In 1635 it was settled by the French, who eventually extinguished the aboriginal race. Pop. 175,391.

Martinmas, the feast of St. Martin of Tours, the 11th of November.

Martinsburg, Berkeley co., West Va., has the extensive works of Baltimore & Ohio R. R. Pop. 1890, 7226.

Martius, KARL FRIEDRICH PHILIPP VON, a German traveller and naturalist, born in 1794, died in 1868. After taking the degree of Doctor of Medicine at Erlangen, he joined Spix in the scientific expedition to Brazil, set on foot by the Austrian and Bavarian governments (1817 to 1820). On his return to Bavaria he was appointed professor of botany and director of the botanic garden

at Munich, appointments which he held till 1864, when he retired. He is the author of a large number of botanical works, but is chiefly known through those arising out of his journey to Brazil—*Reise nach Brasilien* (1824–31); *Historia naturalis Palmarum* (1823–45); and *Flora Brasiliensis* (1840–71), the last two of which are among the most remarkable in botanical literature.

Martos, a town in Spain, Andalusia, in the province of Jaen. It contains a fine 13th-century church. Martos was taken from the Moors in 1225 by Ferdinand III., who bestowed it on the order of Calatrava. Pop. 14,654.

Martyn, HENRY, missionary, son of a miner, born near Truro, Cornwall, 1781. He graduated as senior wrangler at Cambridge in 1797, and in 1805 went out to India as military chaplain. In 1811 he went to Persia, and died in 1812 at Tokat in Asia Minor, while on his way back to Europe. He translated the New Testament into Hindustani and Persian.

Martyr, PETER (more correctly PIETRO MARTIRE D'ANGHIERA), an Italian historian and geographical writer, born in 1455, died in 1526. In 1487 he entered the service of Ferdinand and Isabella of Spain, who created him counsellor of the Indies. Charles V. also treated him with favour. His principal works are *De Rebus Oceanicis et Orbe Novo Decades octo*—a history of the discoveries of Columbus and his successors, from their own narratives; *De Insulis nuper Inventis*; *De Legatione Babylonica*—an account of his embassy to Egypt in 1501; and his *Opus Epistolarium*.

Martyr, PETER (PIETRO VERMIGLI), Protestant divine, born at Florence in 1500; entered the order of the regular canons of St. Augustine at Fiesole in 1516, and in 1519 removed to Padua, where he studied Greek and philosophy. After holding important offices in his order he was compelled in 1542 on account of his religious opinions to take refuge in Zürich. Soon after he became professor of divinity at Strasburg, and in 1547 accompanied Bucer and other reformers, on the invitation of Archbishop Cranmer, to England. He was appointed to the theological chair at Oxford in 1549, but on the accession of Queen Mary was commanded to quit the country, and returned to his Strasburg professorship. In 1556 he removed to Zürich to occupy the office of theological professor. He died in 1562. Peter Martyr was the author of many

works on divinity, including biblical commentaries. His *Epistolæ* were published in 1570; and his *Loci Communes Theologici* in 1580–83.

Martyrology, originally a collection of the acts of the martyrs; now more commonly applied to mere registers of names and deaths of those who have suffered martyrdom for the Christian faith.

Martyrs (Greek for 'witnesses'), a name applied by the Christian church to those persons in particular, who in the early ages of Christianity, and during the great persecutions, suffered ignominy and death rather than renounce their faith. Festivals in honour of the martyrs seem to have been observed as early as the second century. The Christians offered prayers at the tombs of the martyrs, and thanked God for the example which they had given to the world. The rite was concluded with the sacrament of the Lord's supper and the distribution of alms. Eulogies were also delivered, and accounts of the lives and actions of the deceased read.

Maruts, in Hindu mythology, the gods or genii of the winds.

Mar'vell, ANDREW, a political and miscellaneous writer, born at Hull in 1620, died in London 1678. In 1635 he was sent to Trinity College, Cambridge. On the death of his father in 1640 he made the tour of Europe; afterwards acted as secretary to the English legation at Constantinople; and on his return was appointed assistant to Milton in his office of Latin secretary. In 1660 he was chosen member of parliament for his native place, which he represented honourably to the end of his life. Besides a small handful of finely musical poems, he composed much humorous and satirical verse, and was the writer of several political pamphlets. Notwithstanding his opposition to the court his wit commended him to Charles II., who made more than one attempt to win him by bribes, but failed to shake the probity and love of liberty which had gained him the name of the 'English Aristides.'

Marvel of Peru. See *Mirabilis*.

Marx, KARL, German socialist, born in 1818, studied law and philosophy at Berlin. After editing the *Rheinische Zeitung* at Cologne from 1841 till its suppression, he went in 1844 to Paris, where he took part in the publication of the *Deutsch-Französische Jahrbücher*, and a newspaper, *Vorwärts*. Being compelled to flee to Brussels, he

there in 1848 became head of the central committee of the socialists. In the same year he made an attempt at Cologne to revive the *Rheinische Zeitung*, but removed to London in 1849. In 1864 he established the *International*, but after the disruption in 1872, when he led the extreme party, he removed from London to New York. He died in 1883. His chief work, the Bible of one group of socialists, was *Das Kapital*, published in 1867.

Mary, THE VIRGIN, the mother of Jesus, according to tradition embodied in the apocryphal gospels the daughter of Joachim and Anna (of Luke i. 32). The story of her life so far as it is given in the New Testament begins with her betrothal to Joseph (Luke i.), and the narrative of the birth of Christ. She is thrice mentioned during Christ's public ministry (John ii., Matt. xii. 47, John xix. 25-27), and once after his death (Acts i. 14). A tradition asserts that she lived and died at Jerusalem under the care of John; another that she died at Ephesus, to which she and John had retired from the siege of Jerusalem. A later tradition asserts that on her grave being opened three days after her burial only the grave-clothes were found in it. The devotion or adoration paid by Roman Catholics and others to the Virgin Mary is condemned by Protestants in general, who stigmatize it as *Mariolatry*. The title of Mary to adoration did not become a tenet in the orthodox Latin Church till the 6th century, when the Christian Church began to celebrate festivals in her honour, of which the Purification, the Annunciation, and the Visitation (the visit of Mary to Elizabeth) are still retained in Protestant countries. The Greek and Roman Catholics, and the schismatic churches in the East, observe several feasts besides the above in honour of the Virgin; for instance the birth of Mary, and her death and reception into heaven (by the R. Catholics called the *Assumption*). The festival of the Immaculate Conception is celebrated only by the R. Catholic Church.

Mary I., Queen of England, daughter of Henry VIII. by Catharine of Aragon, was born in 1516. After her mother's death she was declared illegitimate, but was restored to her rights when the succession was finally settled in 1544. She was bred up by her mother in the Roman Catholic faith, on which account she was treated with rigour under Edward VI. She ascended the throne in 1553, after an abortive attempt to set her

aside in favour of Lady Jane Grey. One of her first measures was the reinstatement of the R. Catholic prelates who had been superseded in the late reign. Her marriage to Philip II. of Spain, united as it was with a complete restoration of the Catholic worship, produced much discontent. Insurrections broke out under Cave in Devonshire, and Wyatt in Kent, which, although suppressed, formed sufficient excuses for the imprisonment of the Princess Elizabeth in the Tower, and the execution of Lady Jane Grey and her husband Lord Guildford Dudley. England was now formally declared to be reconciled to the pope; the sanguinary laws against heretics were revived, and nearly 300 perished at the stake, including Cranmer, Latimer, and Ridley. Under Philip's influence a war began with France, which ended in the loss of Calais in 1558, after it had been in the hands of the English for above 200 years. This disgrace, and the aversion alike of her subjects and of her husband, told acutely upon Mary's already disordered health, and she died in 1558 after a reign of five years.

Mary II., Queen of England, born in 1662, was daughter of James, duke of York, afterwards James II., by his wife Anne Hyde, daughter of Lord Clarendon. She was married in 1677 to William, prince of Orange; and when the Revolution dethroned her father, Mary was declared joint-possessor of the throne with William, on whom all the administration of the government devolved. During the absence of William in Ireland in 1690, and during his various visits to the Continent, Mary managed at home with extreme prudence. She was strongly attached to the Protestant religion and the Church of England. She died of small-pox in 1694. See *William III.*

Maryland, one of the United States of North America; bounded N. by Pennsylvania, E. by Delaware and the Atlantic, S. by Virginia and Chesapeake Bay, and W. by Virginia and West Virginia; area, 12,210 square miles. The part of the state lying to the east of Chesapeake Bay is called the Eastern shore, and the other on the west the Western shore. The Eastern shore has a low, flat, and somewhat sandy surface, covered in many places with stagnant water, which makes ague and intermittent fever prevalent. The Western shore gradually rises towards the north-west, where it is traversed by a lower branch of the Appalachian chain, and attains the height of 2000

feet above sea-level. Beyond this the land again sinks, forming the Hagerstown Valley, part of the great Appalachian Valley. The chief rivers are the Potomac, the Susquehanna, and the Patapsco. Almost all the lower part of Maryland is covered with alluvial deposits. In the Hagerstown Valley there is a full development of the Carboniferous system, with its valuable seams of coal and ores of iron. There are three important coal-fields in the state. The most important crops are Indian corn, wheat, and oats. Tobacco is very largely grown. The fisheries are productive, and there are extensive oyster-beds. The principal manufactures are cotton goods, cordage, bricks, and articles in iron; the trade, chiefly foreign, is extensive. A large part of the foreign trade consists in the exportation of canned fruits, vegetables, and oysters. The state sends six representatives and two senators to Congress. Annapolis is the seat of government; but Baltimore is the most important city of the state. There is an excellent system of free public schools, and among the higher educational institutions may be noted the St. John's College at Annapolis, and the Peabody Institute (founded in 1857), and the Johns Hopkins University (opened in 1876), both at Baltimore. Maryland received its name from Henrietta Maria, queen of Charles I., by whom this district was granted in 1632 to Sir George Calvert, Lord Baltimore. It was one of the original thirteen states. During the civil war opinion was much divided in the state, but it was retained on the Northern side. Pop. 1,042,390; of whom 218,004 were coloured.

Maryport, a seaport of England, county of Cumberland, 28 miles west of Carlisle, at the mouth of the Ellen. The industries include iron-founding, brewing, tanning, flour-milling, and sail-making. The herring-fishery is productive. There are several collieries and iron-furnaces. Pop. 9827.

Mary Stuart, Queen of Scots, was born at Linlithgow Palace in 1542, and was the daughter of James V. by his queen, Mary of Lorraine, a princess of the family of Guise. Her father dying when she was a few days old, the regency was, after some dispute, vested in the Earl of Arran, who declined Henry VIII.'s demand for the hand of Mary for his son Edward. In the summer of 1548 the young queen was sent by her mother to France, where she was educated in a French convent, and in 1558 was married to the dauphin, afterwards Francis II.

He died seventeen months after his accession to the crown, in December 1560, and in August 1561 the widowed queen returned to Scotland. Mary had, of course, been educated in France as a Roman Catholic, but when she returned to Scotland she found that the influence of the Presbyterians was paramount in her kingdom. Though inclined to have Roman Catholicism again set up in Scotland, after a vain attempt to influence Knox she resigned herself to circumstances, quietly allowed her half-brother, the Protestant Earl of Moray, to assume the position of first minister, surrounded herself with a number of other Protestant advisers, and dismissed the greater part of her train of French courtiers. She even gave these ministers her active support in various measures that had the effect of strengthening the Presbyterian party; but she still continued to have the mass performed in her own private chapel at Holyrood. At first her subjects were quiet, she herself was popular, and her court was one of the most brilliant in Europe. The calamities of Mary began with her second marriage, namely, to her cousin, Lord Darnley, whom she married on July 29th, 1565. Darnley was a Roman Catholic, and immediately after the marriage the Earl of Moray and others of the Protestant lords combined against the new order of things. They were compelled to take refuge in England, and the popularity of Mary began to decline. In addition to this Darnley proved a weak and worthless profligate, and almost entirely alienated the queen by his complicity in the murder of Rizzio (March 9, 1566), though a reconciliation seemed to be effected between them about the time of the birth of their son, afterwards James VI. of Scotland and I. of England (19th of June, 1566). About the close of the same year, however, Darnley withdrew from the court, and in the meantime the Earl of Bothwell had risen high in the queen's favour. When the young prince James was baptized at Stirling Castle, on the 7th of December, 1566, Bothwell did the honours of the occasion, and Darnley, the father of the prince, was not even present. Once more, however, an apparent reconciliation took place between the king and queen. Darnley had fallen ill, and was lying at Glasgow under the care of his father. Mary visited him, and took measures for his removal to Edinburgh, where he was lodged in a house called Kirk-of-Field, close to the city wall. He was there

tended by the queen herself; but during the absence of Mary at a masque at Holyrood the house in which Darnley lay was blown up by gunpowder, and he himself was afterwards found dead with marks of violence on his person (February 9, 1567). The circumstances attending this crime were very imperfectly investigated, but popular suspicion unequivocally pointed to Bothwell as the ringleader in the outrage, and the queen herself was suspected, suspicion becoming still stronger when she was carried off by Bothwell, with little show of resistance, to his castle of Dunbar, and married to him on the 15th of May. A number of the nobles now banded together against Bothwell, who succeeded in collecting a force; but on Carberry Hill, where the armies met on the 15th June, his army melted away. The queen was forced to surrender herself to her insurgent nobles, Bothwell making his escape to Dunbar, then to the Orkney Islands, and finally to Denmark. The confederates first conveyed the queen to Edinburgh, and thence to Loch Leven Castle, where she was placed in the custody of Lady Douglas, mother of the Earl of Moray. A few days after, on the 20th of June, a casket containing eight letters and some poetry, all said to be in the handwriting of the queen, fell into the hands of the confederates. The letters, which have come down to us only in the form of a translation appended to Buchanan's *Detection*, clearly show, if they are genuine, that the writer was herself a party to the murder of Darnley. They were held by the confederates to afford unmistakable evidence of the queen's guilt, and on the 24th of July she was forced to sign a document renouncing the crown of Scotland in favour of her infant son, and appointing the Earl of Moray regent during her son's minority. After remaining nearly a year in captivity Mary succeeded in making her escape from Loch Leven (May 2, 1568), and, assisted by the few friends who still remained attached to her, made an effort for the recovery of her power. Defeated by the Regent's forces at the battle of Langside (May 13, 1568), she fled to England, and wrote to Elizabeth entreating protection and a personal interview; but this the latter refused to grant until Mary should have cleared herself from the charges laid against her by her subjects. For one reason or another Elizabeth never granted Mary an interview, but kept her in more or less close captivity in England,

where her life was passed in a succession of intrigues for accomplishing her deliverance. For more than eighteen years she continued to be the prisoner of Elizabeth, and in that time the place of her imprisonment was frequently changed, her final prison being Fotheringhay Castle, Northamptonshire. She was at last accused of being implicated in a plot by one Babington against Elizabeth's life, and having been tried by a court of Elizabeth's appointing, was on the 25th of October, 1586, condemned to be executed. There was a long delay before Elizabeth signed the warrant, but this was at last done on the 1st of February, 1587. Mary received the news with great serenity, and was beheaded a week later, on February 8, 1587, in the castle of Fotheringhay. Authorities are more agreed as to the attractions, talents, and accomplishments of Mary Stuart than as to her character. Contemporary writers who saw her unite in testifying to the beauty of her person, and the fascination of her manners and address. She was witty in conversation, and ready in dispute. In her trial for alleged complicity in Babington's plot she held her ground against the ablest statesmen and lawyers of England. Besides letters and other prose writings, Mary was the author of some short poems of no great merit. The best is one on the death of her first husband, Francis II. The lines beginning '*Adieu, plaisant pays de France,*' long ascribed to her, were written by a French journalist of the 18th century.

Masaccio (mā-sāt'chō), properly TOMMASO GUIDI, one of the oldest painters of the Florentine school, said to have been born about 1401. In the church del Carmine, at Florence, are some excellent paintings of his, also at St. Clemente in Rome, but in a bad state. Baldinucci and Vasari place Masaccio among the first painters by whom the harshness and difficulty of the art was diminished, and life and expression given to it. He died in 1428.

Masa'i-Land, a region in eastern equatorial Africa, between the Victoria Nyanza and the sea, and so named from the Masai, who are its chief inhabitants. It is generally elevated, Mount Kilimanjaro being the chief mountain mass. It contains Naivasha and other lakes. The Masai are a well-built race, not of the negro type, and support themselves partly by cattle-raising, partly by the plunder of their weaker neighbours. The country was recently explored by Joseph Thomson and by Dr. Fischer. It is partly

within the British, partly within the German 'sphere of influence.'

Masaniel'lo, properly TOMMASO ANIELLO, a celebrated Neapolitan insurgent, born at Amalfi in 1622. He gained a livelihood in Naples as a fisherman and a dealer in fish and fruit, and his outspokenness with regard to Spanish oppression procured him a large faction among the common people. In 1647 Masaniello refused to pay the tax on a basket of fruit brought by him to the city. He was supported by the people, who broke into open rebellion and carried all before them. The Spanish viceroy was forced to make concessions and redress grievances, whereupon Masaniello laid down his arms and returned to his former station. But the great power which he still possessed made him appear dangerous to the viceroy, who invited him to his own house, and probably mingled poison with his wine. In a delirium the unfortunate man ran through the streets of Naples, shooting his best friends, and committing the greatest excesses. He was accordingly assassinated by some of his companions in the rising, but the next day his murderers became victims to the popular rage. Auber has embodied the leading facts in his opera, *La Muette de Portici*, more usually called *Masaniello*.

Masa'ya, a town of Central America, in Nicaragua, 12 miles north-west of Granada, in a very fertile district near the volcano of Masaya (3500 feet high). Pop. 10,000.

Mas'calonge (*Esox nobilior*), a fine North American fresh-water fish of the pike genus, inhabiting the St. Lawrence basin, but also introduced into other waters.

Mascara', a town in Algeria, picturesquely situated on the south slope of Mount Atlas, 48 miles south-east of Oran, surrounded by a wall. It was a stronghold of Abd-el-Kader, and was taken by the French in 1835 and 1841. Pop. 13,074.

Mas'carene Islands, the islands of Bourbon, Mauritius, and Rodriguez, so called from Mascarenhas, a Portuguese navigator, who discovered Bourbon in 1545.

Masinis'sa, King of ancient Numidia, at first only of the eastern portion of the country, but latterly of the whole, having, by the help of the Romans during the second Punic war, defeated Syphax, king of Western Numidia, taking him prisoner with his wife Sophonisba, whose hand had formerly been promised to Masinissa. Masinissa now made her his wife, but Scipio

Africanus, fearful of her influence, claimed her as a prisoner of Rome. Unable to resist, Masinissa sent her a poisoned chalice, of which she voluntarily drank. Masinissa commanded the Roman cavalry on the right wing at the battle of Zama, which ended the second Punic war (201 B.C.). His acquisition of a number of Carthaginian provinces led to the third Punic war, in the second year of which he died (148 B.C.), aged about a hundred years. His kingdom, at his own desire, was divided amongst his three sons, of whom Mastanabal, the youngest, was the father of Jugurtha.

Mask, a covering for the face, often shaped so as to form a rude representation of the human features. They have been in use from the most ancient times. Among the Greeks they were used particularly in the processions and ceremonies attending the worship of Dionysus (Bacchus). As the origin of Grecian tragedy was closely connected with the worship of Dionysus, masks were used in it even in the beginning. The ancient masks usually covered the whole head, and represented, with the features, the head, hair, and eyes. They had mostly very large open mouths, and seem to have had some effect in strengthening the voice of the speaker, this being required by the immense size of the old theatres. The Roman theatre differed little from the Grecian in the use of the mask, which the Italian popular theatre, called *Commedia dell' Arte*, closely resembling the old Roman mime and pantomime, still retains. The mask used at masked balls or masquerades is a covering for the head and face made from a light stuff, a common form being the half-mask covering eyes and nose only. See *Masqued-ball*.

Mask, a species of drama. See *Masque*.

Mask, THE IRON. See *Iron Mask*.

Maskelonge. See *Mascalonge*.

Mas'kelyne, NEVIL, English mathematician and astronomer, born in 1732, educated at Westminster and Cambridge, chosen a fellow of the Royal Society, and in 1761 deputed to proceed to St. Helena to observe the transit of Venus. In 1765 he became astronomer royal; and in 1767 commenced the publication of the *Nautical Almanac*, which he edited till his death. In 1774 he was employed in observations on the eclipses of Jupiter's satellites; and the same year went to Scotland to ascertain the gravitative attraction of the mountain Schiehallien. He died in 1811.

Mason, WILLIAM, an English poet, born in 1725. He studied at Cambridge, and in 1748 published *Isis*, a poem, in which he satirized the Jacobitism and high churchism prevalent in the University of Oxford. This piece provoked a reply from Thomas Warton, entitled the *Triumph of Isis*. In 1752 he published his *Elfrida*, a tragedy on the Greek model. Having obtained the living of Aston, Yorkshire, he was appointed one of the royal chaplains. In 1759 appeared his *Caractacus*, a drama. Some years after Mason was made precentor and residentiary canon at York. One of his principal works, the *English Garden*, a poem, appeared between 1772 and 1782. In 1775 he published the poems of his friend Gray, with a memoir. He also translated Du Fresnoy's *Art of Painting* (1783), and wrote a *Life of William Whitehead* (1788), and an *Essay on Church Music* (1795). He died in 1797.

Mason and Dixon's Line, the line of 39° 43' 26·3" north latitude, which separates the states of Maryland and Pennsylvania, in the United States. From the time of the grant of the latter territory to William Penn by Charles II. in 1681 there were disputes between the family of Penn and that of the Lords Baltimore, the possessors of Maryland, as to the boundary between the two territories. An agreement was at last come to in 1763, the line of demarcation being named after the astronomers Charles Mason and Jeremiah Dixon, who traced the greater part of it. Milestones were set up along the whole of this boundary line.

Mason-bees, a name given to hymenopterous insects of the genera *Osmia* and *Chalcidoma*, which construct their nests with sand or gravel, agglutinated together by means of a viscid saliva, and fix them on the side of walls, &c., or avail themselves of some cavity for that purpose. The mason-bees, like the carpenter-bees, leaf-cutters, and other allied forms, are solitary in habits, not living in communities like the ordinary bees and wasps.

Masonry, FREE. See *Freemasonry*.

Mason-spider (*Mygale* or *Oteniza cæmentaria*), a spider more commonly known as the 'Trap-door Spider' (which see).

Mason-wasp, a name given to certain hymenopterous insects, especially *Odynerus musarius*, from their ingenuity in excavating their habitation in the sand.

Masoo'la-boat, a large East Indian boat



Masoola-boat of Madras.

used on the Coromandel coast for conveying passengers and goods between ships and the shore. They stand high out of the water, are difficult to manage, and sail slow; but they sustain shocks that would break up any European boat, the planks of which they are built being fastened together by cocoa-nut fibres. They are rowed sometimes with as many as sixteen oars.

Maso'ra, or **MASSO'RAH**, a Hebrew word signifying 'tradition,' the name of a collection of notes referring to the Hebrew text of the Old Testament, and written in Chaldee chiefly on the margin of Hebrew MSS. These notes are various in their character, critical, grammatical, and explanatory, and include an indication of the vowel-points and accentuation of the Hebrew text according to the Jewish tradition. At what time the accumulation of these notes was commenced cannot be ascertained. According to some Jewish writers they were begun in the time of Ezra. A large part of them were compiled in the Jewish schools of Tiberias subsequent to the 3d century, and the collection was not completed till the 8th century at the earliest.

Masque, or **MASK**, a dramatic entertainment much in favour in the courts of princes during the 16th and 17th centuries, in the latter particularly in England. In its ear-

liest form it is perhaps best described as a masquerade with an arranged programme of music, dancing, &c., and a banquet. The first masque of this kind in England, according to Holinshed's Chronicle, was performed in 1510, and they were frequently introduced into the plays of Shakspeare, Beaumont and Fletcher. The parts in the masques of the 16th and 17th centuries were usually represented by the first personages of the kingdom: if at court the king, queen, and princes of the blood often performed in them. Under James I. the masque assumed a higher character, more artistic and literary care being expended in its preparation. In this regard Ben Jonson takes an important place, his masques, despite much that is frigid and pedantic, having not a little genuine poetry. Inigo Jones was for a number of years exclusively employed upon the decorations and elaborate machinery of the court masques, and Henry Lawes wrote the music for several of them. Milton's *Comus* is, from the literary point of view, the most beautiful of the productions which bear the name of masque, though possibly defective in the matter of spectacle and music. The taste for masques decreased in the reign of Charles I., and after the interruption given to the progress of dramatic art and literature by the civil war they were not again brought into fashion.

Masqued-ball, an entertainment, generally of a public character, in which the company are masked or otherwise disguised by dominoes. This kind of amusement became popular in Italy about the year 1512, about which time it was introduced into England by Henry VIII. It is popular in the large cities on the Continent, particularly in carnival time. The *bal costumé*, in which the dancers appear in fancy costumes, but unmasked, is the nearest approach which English taste and law allow to this species of entertainment, which, from its nature, is peculiarly liable to abuse.

Mass, in the Roman Catholic Church, the prayers and ceremonies which accompany the consecration of the eucharist. The word is used generally for all that part of the Catholic service in which the eucharist is offered. At present the mass consists of four chief parts:—1. The introduction; 2, the *offertorium*, or sacrifice; 3, the consecration; 4, the communion. These four chief parts, of which the latter three are considered the most essential, are composed of

several smaller parts, each having its proper denomination. They consist of prayers, hymns, shorter and longer passages of the Holy Scriptures, and a number of ceremonies, which, as the essential point of the mass is the sacrifice of the Lord, consist partly of symbolical ceremonies commemorative of important circumstances in the Saviour's life, or signs of devotion and homage paid to the presence of the Lord in the host. The order of these ceremonies, and of the whole celebration of the mass, is given in the missal or mass-book. The masses are modified according to many circumstances, *e.g.* according to the saint in honour of whom the mass is celebrated, or the seasons of the year connected with different events in the Saviour's life, or the purpose for which the mass is said, as the *missa pro defunctis* (mass for the dead). *Votive mass* is an extraordinary mass, instead of that of the day, rehearsed on some special occasion. *Low mass* is the ordinary mass performed by the priest, without music. *High mass* is celebrated by the priest, assisted by a deacon and sub-deacon or other clergy, and sung by the choristers, accompanied by the organ and other musical instruments. Besides these there are different masses according to the different rites; the *Greek mass*, the *Latin mass*, the *Roman* and *Gregorian mass*, &c.

Mass, in physics, the quantity of matter in any body, or the sum of all the material particles of a body. The *mass* of a body is estimated by its weight, whatever be its figure, or whether its bulk or magnitude be great or small. See *Dynamics*.

Massa-Carrara, formerly a small state of Italy, situated on the western slope of the Apennines, bounded principally by Tuscany and the Duchy of Modena. In 1741 it passed into the hands of the house of Modena, with whom, excepting the period of French occupation (1796–1814), it remained until 1859, when it was united with those portions of the duchies of Parma and Modena lying west of the Apennines, and erected into the province Massa e Carrara. The province is celebrated for the Carrara marble. Area, 685 sq. miles; pop. 181,007.

Massachu'setts, one of the Atlantic United States of North America, bounded north by Vermont and New Hampshire; east by the Atlantic; south by the Atlantic, Rhode Island, and Connecticut; and west by New York; area, 8315 sq. miles; capital, Boston. The coast-line of the state, which has a length of about 250 miles, is indented with

deep and extensive bays, of which Massachusetts Bay (which includes the large bays of Boston and Cape Cod), Buzzard and Nantucket Bays are the most capacious. The indentations in these bays form excellent harbours, the most commodious of which are Newburyport, Boston Harbour, and Marblehead. The islands of Nantucket and Martha's Vineyard, with several others, belong to Massachusetts. The west part of the state is traversed by the Green Mountain, whose loftiest peak rises 3500 feet above sea-level. The most considerable rivers are the Connecticut, Housatonic, and the Merrimac. The soil is poor and sandy near the coast, where salt marshes frequently occur; but in the middle and western parts it is very fertile and well cultivated. Iron, granite, syenite, white marble, and slate are wrought. The climate is liable to extremes of heat and cold. The mean annual temperature is about 48°. The principal vegetable productions are Indian corn, rye, oats, potatoes, hemp, flax, pease, hops, beans, and pumpkins; wheat, buck-wheat, and barley are raised only in small quantities. A considerable portion of the surface of the ground is still covered with forests, consisting of pine, oak, walnut, birch, maple, ash, cedar, cherry, and chestnut. All the fruit-trees of England are cultivated with success. Massachusetts is, in regard to the actual amount of its manufactures, the third state in the Union, being excelled in this respect only by New York and Pennsylvania; but in proportion to its area and population it is the first. Lowell is the great centre of the cotton manufactures. Worsted goods, hosiery, silks, linens, &c., are largely manufactured. There are numerous forges and furnaces; machine-shops, manufactures of edge-tools, agricultural implements, cutlery, boots and shoes, &c. Ship-building is carried on extensively. In shipping Massachusetts is superior to any other state of the Union except New York. The means of internal communication are ample. In connection with the railways may be mentioned the Hoosac Tunnel piercing the Hoosac Mountain in the north-west corner of the state, with a length of $5\frac{3}{4}$ miles. In educational matters Massachusetts has a high reputation, amongst its leading institutions being Harvard University, the oldest in the Union, Boston University, and Amherst College. Massachusetts is divided into fourteen counties; and besides the capital, Boston, the chief towns are Worcester, Lowell, Cam-

bridge, Fall River, Lawrence, and Lynn. It was at first composed of two colonies—Plymouth colony, first settled by 120 Puritan families who landed in Plymouth in 1620; and Massachusetts Bay colony. These two were united in 1692, under the name the state now bears. Massachusetts played a leading part in the American revolution. Pop. 2,238,943.

Massachusetts Bay, a large bay to the east of the central part of Massachusetts; bounded on the north by Cape Ann, and on the south by Cape Cod.

Massa'fra, town of Southern Italy, province of Lecce, 10 miles from Taranto, near the sea and in the centre of an important olive-growing district. Pop. 9719.

Massage (mas'âzh, Fr. *masser*, to knead), a form of medical treatment in which the body of the patient, or some particular part of it, is subjected at the hands of an attendant to a variety of processes technically discriminated as stroking, rubbing, kneading, pinching, pressing, squeezing, and hacking. The tendency of this treatment is to assist and stimulate the circulation, and to increase the waste-removing action of the lymphatic vessels, and thus to affect the nutrition, not only of the parts acted upon, but of the whole body, and promote the removal of local swellings, inflammatory products, &c. The process, for which half an hour daily is usually sufficient, is performed upon the naked skin by the bare hands of the operator, no oil being used; and the hands ought to be strong and firm, but soft, very considerable exertion being expended in the operation. The attendant (who is termed a *masseur*, if a man; a *masseuse*, if a woman) needs to be carefully trained, and should have a sufficient knowledge of anatomy to be able to separate out with the fingers a single muscle or group of muscles for treatment, and to trace the direction of the larger vessels and nerve-trunks and act upon them directly. The principal movements should be characterized by a certain uniformity and method. Thus in stroking with a steady pressure the limbs of the patient, the strokes should always be from the extremities towards the heart, not backwards and forwards in a random way; and in kneading the belly with the heel of the hand, the movements are carried round in the direction of the colon. The treatment has been remarkably successful in cases of nervous disorder of a hysterical kind, and in cases of wasting through

imperfect nutrition dependent upon disturbances of stomach, bowels, or liver; and it has proved valuable in diabetes, some of the special diseases of women, and certain cases of paralysed and contracted muscles.

Massagetæ (mas-saj'e-tē), a collective name given by the ancients to the nomadic tribes of Central Asia who dwelt to the east and north-east of the Caspian Sea. Cyrus lost his life in fighting against them.

Massa'i. See *Masai*.

Massaua. See *Massowa*.

Masséna (mās-ā-nā), **ANDRÉ**, Marshal of France, born in 1758 at Nice. In 1775 he entered the French army, in which he became an inferior officer. After fourteen years' service he left the army and returned to Nice, where he married. During the revolution he entered a battalion of volunteers, was elected chief of his battalion in 1792, and in 1793 made general of brigade. In 1794 he was appointed general of division, and took command of the right wing of the French army in Italy, where, at Rivoli and elsewhere, he highly distinguished himself. In 1799 he defeated the Austrian and Russian forces at Zürich, and in 1800, by his defence of Genoa for three months, gave Bonaparte time to strike successfully at Marengo. In 1804 he was created marshal of the empire. In 1805 he received the chief command in Italy, where he lost the battle of Caldiero, and after the peace of Pressburg occupied the Kingdom of Naples. In 1807 he was given the command of the right wing of the French army in Poland, and soon after received the title of Duke of Rivoli. In 1809 he distinguished himself against the Austrians, and at Esslingen his constancy and firmness saved the French army from total destruction. Napoleon rewarded him with the dignity of Prince of Esslingen. In 1810 he took command of the army in Portugal, and forced Wellington within the lines of Torres Vedras, till want of provisions compelled Masséna to retire. Napoleon recalled him from Spain, and in 1812 left him without a command. In 1814 he was made a peer by Louis XVIII., and though on the return of the emperor he acknowledged his authority, he took no active part in the events of the hundred days. He died in 1817.

Massenet (mās-nā), **JULES**, French composer, born in 1842. He studied at the Paris Conservatoire, of which in 1878 he became a professor. He is the composer of several operas, of which the best known are

Herodias, Don César de Bazan, and Manon Lescaut. His *Scènes Pittoresques* are also well known, and there is a long list of works by him, including the choral works *Maria Magdalene*, *Eva*, *La Vierge*, &c.

Massey, **GERALD**, English poet, born at Tring in 1828, of poor parents, and for some time an errand-boy in London. He subsequently edited the *Spirit of Freedom*, a Radical paper, and in 1854 published his *Ballad of Babe Christabel*, and other poems. The volume attracted the notice of Landor, and the poems issued in succession to it met with no little popularity. For some years Massey wrote poetical criticisms for the *Athenæum*. One of the best of his prose works is the ingenious *Secret Drama of Shakspeare's Sonnets*, first published in 1864-72, and since republished. Other works are *A Tale of Eternity* and other Poems (1869), *Concerning Spiritualism* (1872), *A Book of the Beginnings* (1882), and the *Natural Genesis* (1884). For some years he has been popular both at home and in the colonies as a lecturer on Spiritualism and various social and socialistic subjects.

Mas'sico (*Mons Massicus*), a mountain in the province of Terra di Lavoro, Naples, Italy, and having on its slopes a town of the same name. The Massic wine has been famous from remote times.

Massicot, the yellow protoxide of lead (Pb O), used as a pigment, &c. See *Litharge*.

Massillon (mās-ē-yōn), **JEAN BAPTISTE**, French pulpit orator, born in 1663 at Hyères, in Provence; entered in his eighteenth year the congregation of the Oratory, professed belles-lettres and theology at Montbrison and Vienne; and was called to Paris in 1696 to direct the Seminary of St. Maloire. The applause which he met with in Paris, even at court, was almost without example. Louis XIV. gave him special praise, and the deaths of Bossuet and Bourdaloue in 1704 left him at the head of the French preachers. He pronounced the funeral oration of Louis XIV. in 1715, and in 1717 the regent appointed him to the see of Clermont. In the year following he was chosen to preach before Louis XV. He died in 1742. He was the greatest pulpit orator France has produced.

Massillon, Stark co., Ohio, is a substantially built city, surrounded by productive coal-fields. The white sandstone quarried in its vicinity is shipped to all parts of the country. Its industries are varied. Pop. 1890, 10,092.

Massinger (mas'in-jér), PHILIP, a distinguished English dramatist, born at Salisbury in 1584. He studied at Oxford, but quitted the university without taking a degree, and repaired to London about 1606. Little is known of his personal history beyond the fact that he was associated with Fletcher, Middleton, Rowley, and Dekker in the composition of certain plays. A note of his burial appears in the register of St. Saviour's, Southwark: 'March 20, 1639-1640, buried Philip Massinger, a stranger.' As a dramatist Massinger is more natural in his characters and poetical in his diction than Jonson, and some critics rank him next to Shakspeare. In tragedy, however, he is rather eloquent and forcible than pathetic, and he is defective in humour. His best plays are the *Duke of Milan*, *A City Madam*, *A Very Woman*, *The Fatal Dowry*, *A New Way to Pay Old Debts*. The last-mentioned still maintains its place on the stage, chiefly on account of the characters Marrall and Overreach.

Masson, DAVID, critical and biographical writer, born in Aberdeen in 1822, educated at the Marischal College and at Edinburgh University. After engaging in miscellaneous literary work in Edinburgh and London, he was in 1852 appointed to succeed Clough in the chair of English language and literature at University College, London. In 1859 he became editor of *Macmillan's Magazine*, and in 1865 accepted the chair of rhetoric and English literature in the University of Edinburgh. His works include his collected contributions to the *Quarterlies* and other magazines (1856, reprinted with additions in 1874); an elaborate and comprehensive study of Milton's life and times (six volumes, 1858-80); *British Novelists and their Styles* (1859); *Recent British Philosophy* (1865); *Drummond of Hawthornden* (1873); *The Three Devils* (1874); an important edition of *Milton's Poems* (1877); and a life of *De Quincey* (1878).

Masso'wa, MASSOWAH, or MASSAUA, a seaport and strip of territory on the Red Sea coast of Africa, now belonging to Italy. The town stands on a small barren coral island only a few hundred yards from the mainland, and is very hot and unhealthy. It is the natural commercial outlet for the products of the Sudan and northern Abyssinia, and the exports brought by caravans from the interior include rhinoceros-horns, gold, ivory, honey, wax, &c. Until 1885 it

was an Egyptian possession, but was then taken possession of by Italy. Pop. (exclusive of Italian troops), 5000.

Massys. See *Matsys*.

Mast. See *Ship*.

Master, in the navy, formerly the name of the officer who had the charge of the details of the navigation of the ship under the general orders of the captain. The duties discharged by the master have latterly been consigned to an officer known as *navigating lieutenant*. The rank of master (between that of ensign and lieutenant) still exists in the navy of the United States.

In the mercantile navy, the master is the person intrusted with the chief command of the vessel, and usually styled by courtesy captain. He is the confidential servant or agent of the owners, who are bound to answer for a breach of contract committed by him. The master has power to hypothecate or pledge the ship and cargo for necessary repairs executed abroad. He may enforce obedience to his lawful commands by reasonable and moderate chastisement, but has no jurisdiction over a criminal; his business is to deliver him to the proper tribunals. He is compelled to keep a proper log-book, and must produce it, with the ship's papers, on the requisition of the commander of a ship-of-war of his own nation. The master of an American ship must be a citizen of the United States. In Europe generally their qualifications in point of skill and experience must be attested by examination by proper authorities; but in the United States the civil responsibility of the owners for their acts is esteemed sufficient. He is liable to the owners by whom he is selected.

Master and Servant. In legal acceptance a servant is one who owes his services to another for a limited period. Servants consist of two classes, namely, those who engage to perform certain duties for certain wages, and apprentices who may receive something by way of wages, but who have to be taught a trade. The chief classes of servants are: agricultural labourers, operatives or skilled labourers, and menials or domestic servants. In England, if the contract for service is for more than a year, it must be drawn up in writing; if for a year or less, or for an indefinite period, it may be verbal. If the contract is for a year, and if the servant is discharged without just cause during the year, he may claim wages up to the end of the year; on the

other hand, if he leave without cause before the time, he can claim no wages at all. If he happen within the year to fall sick, or be hurt or disabled in the service of his master, the master cannot put him away or abate any part of his wages for that time. In the case of a year's engagement warning must be given a quarter before the service terminates. If a yearly servant is discharged for conduct warranting the discharge, all his wages may be forfeited. If a domestic servant be engaged under no special contract, a month's warning or payment of a month's wages is all that is necessary. Operatives may be discharged or may leave at a week, a fortnight, or month's notice, according to the recognized local or trade usage. The grounds on which a servant may be legally discharged without warning are wilful disobedience of lawful commands within the sphere of the service for which he is engaged, gross immorality, habitual negligence, and incompetence. A servant is liable to an action for gross neglect of his master's property, and also for fraud and misfeasance. In general if a servant refuse to enter service after engagement or leave it without sufficient cause, he is liable merely to an action for breach of contract. In the case of skilled labourers and agricultural servants (not of domestics) justices of the peace have power to compel the servant, under pain of imprisonment, to remain in the service until his legal notice to leave has been worked out. A master has no right to chastise a servant, whatever the servant's age may be, but has the right of moderately correcting an apprentice under age. He is also liable in cases where his servant, in the ordinary course of his duty and acting within the scope of implied or expressed orders, injures a third party. A master can turn a domestic servant out of his house at a moment's warning without notice on payment of wages for the full term of the engagement; but if he does so without just cause, the servant is entitled to board wages for the full period. The death of the master discharges the contract; but in Scotland the servant can claim wages for the whole of the contracted period, but is bound in that case to serve the master's executors. In case of the bankruptcy of the master the servant is a privileged debtor for wages due and unpaid for three months, but ranks as an ordinary creditor for the balance; in Scotland he has a preferential claim for the whole amount of

wages for the current term. A master is not legally bound to give a discharged servant any character; but if a character be given it must be in accord with the truth. A master cannot, without express stipulation, deduct from the servant's wages the value of articles broken by the servant, even if through want of care, however gross. If a female servant marries she must serve out her term if insisted on, her husband having no power to take her out of her master's service.

Master in Chancery, formerly the title of the assistants to the lord-chancellor and master of the rolls. They had to deal with interlocutory orders for stating accounts, computing damages, &c., and also administered oaths, took affidavits, and acknowledgments of deeds and recognizances.

Master of Arts (M.A. or A.M., *artium magister*), an academical honour conferred by the universities of Britain, the United States, Germany, &c., upon students after a course of study and a previous examination in the chief branches of a liberal education, particularly languages, philosophy, mathematics, physics, and history. The precise period of the introduction of this title is not known; but even in the 12th and 13th centuries the honour was so highly esteemed in France that the most distinguished men were eager to obtain it. Afterwards, when the universities were multiplied, and many abuses crept in, it lost much of its importance. In the English universities this degree is the highest in the arts faculty. In the German universities the title is merged in that of Doctor of Philosophy (Ph.D.).

Master of Court, the title given in England to officers under the judges, whose duties comprise the taxing of costs, computing of damages, and attending the judges in court.

Master of the Buckhounds, an officer of the royal household of Britain, in the master of the horse's department. He is intrusted with all matters connected with the royal hunts. He goes out of office on a change of ministry.

Master of the Horse, the third chief officer in the royal household of Britain, whose duty it is to superintend the royal stables and all horses belonging to the queen. He has the privilege of using the royal horses, pages, and servants, and rides next to the queen on all state occasions. His tenure of office (annual salary £2500) is dependent

upon the existence of his political party in power.

Master of the Rolls, one of the judges of the Chancery Division of the High Court of Justice, the keeper of the rolls of all patents and grants that pass the great seal, and of all records of the Court of Chancery. He ranks next after the Lord Chief-justice of the Queen's Bench, and above the Lord Chief-justice of the Common Pleas. The salary attached to the office is £6000 a year.

Master-Singers (German, *Meistersinger*), the name of a literary guild or association which flourished in Mainz, Strasburg, Augsburg, Nürnberg, and various other German cities, in the 14th and 15th centuries, in some cases surviving even to recent times. It represented the poetical efflorescence of burgher life as the Minne-singers had represented that of the feudal chivalry. The members of the guild met and criticised each other's productions in accordance with a remarkable series of canons dealing with literary form. Victory in their own competitions carried with it the right to take apprentices in song-craft, who at the expiry of their term, and after singing for some time with acceptance, were themselves admitted as full masters. Among the most famous master-singers were Hans Sachs, Henry of Meissen (*Frauenlob*), Regenbogen, Hadlaub, and Muscatblut. The development of artificial canons in the search for novelty ultimately reduced the whole scheme to utter absurdity.

Mastic, a kind of mortar or cement for plastering walls. It is composed of finely ground Oolitic limestone mixed with sand and litharge, and is used with a considerable portion of linseed-oil; it sets hard in a few days, and is much used in works where great expedition is required.

Mastic, **MASTICH**, a resin exuding from the mastic-tree (*Pistacia Lentiscus*), a native of Southern Europe, North Africa, and Western Asia. The resin, which is principally produced in the Levant, and chiefly in the island of Chios, is obtained by making transverse incisions in the bark, from which it issues in drops. It comes to us in yellow, brittle, transparent, rounded tears, which soften between the teeth with a bitterish taste and aromatic smell. Mastic consists of two resins, one soluble in dilute alcohol, but both soluble in strong alcohol. It is used as an astringent and an aromatic. Its solution in spirits of wine constitutes a good varnish. Barbary mastic is obtained

from the *Pistacia atlantica*, which grows in the north of Africa and the Levant. Mastic is consumed in vast quantities throughout the Turkish Empire as a masticatory for cleansing the teeth and imparting an agreeable odour to the breath. It was formerly in great repute as a medicine throughout Europe. See also *Lentiscus*.

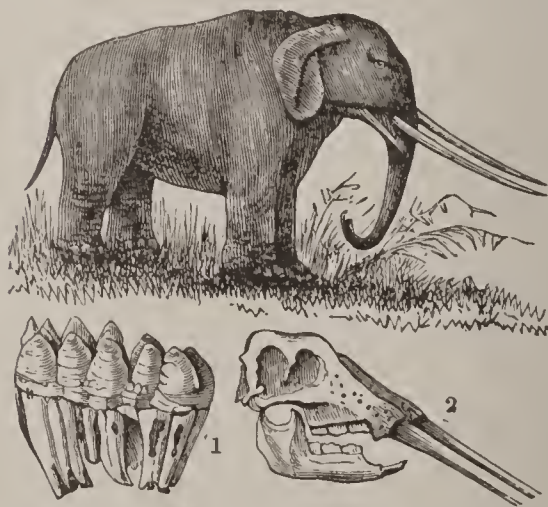
Mastication, the process of division of the food effected in the mouth by the combined action of the jaws and teeth, the tongue, palate, and muscles of the cheeks. This process is seen in its typical perfection in the higher Vertebrata only. By it the food, besides being triturated, is mixed with the salivary fluid. Imperfect mastication is a fertile source of indigestion.

Mastiff, a race of large dogs found under various names from Tibet to England. The English mastiff is a noble-looking dog with a large head, a broad muzzle, lips thick and pendulous on each side of the mouth, hanging ears and smooth hair, the height at the shoulder usually ranging from 25 to 29 inches. The old English breed was brindled, but the usual colour to-day is some shade of buff with dark muzzle and ears. The Tibet mastiff, which is also a fine animal, is common in Tibet and in Bhutan as a house dog.

Mastiff-bat, a name given to an Asiatic and South African bat of the genus *Molossus*, from its head resembling that of the mastiff-dog.

Masti'tis, inflammation of the breast in women.

Mas'todon, an extinct genus of Probos-



Mastodon restored.

1, Molar tooth, weighing 17 lbs. 2, Skull of Mastodon of Miocene period.

cidea or Elephants, the fossil remains of which first occur in the Miocene rocks of the Tertiary period, and which persist through

the Pliocene and Post-pliocene epochs also. In general structure the mastodons bear a close resemblance to the existing species of elephants. Their chief peculiarities consist in the dentition and structure of the teeth, from the curious mammillary processes on which the generic name is derived (Greek *mastos*, breast). The geographical range of the mastodons included North America, Europe, and Asia—one species, the *Mastodon longirostris*, having inhabited England, Germany, France, and Italy. A specimen, almost entire, of the *Mastodon turicensis*, from the Pliocene deposits of Piedmont, measured 17 feet from the tusks to the tail; and an American specimen measured 18 feet in length and 11 feet 5 inches in height.

Masulipatam', a town of India, Presidency of Madras, 220 miles N.N.E. from the city of that name, on a low flat on the Bay of Bengal, near one of the mouths of the Kistnah. It consists of the pettah or native town, the European quarter, and the fort, at some distance and now neglected. The town is a station of the Church Missionary Society, and there are both Protestant and Roman Catholic churches. The manufactures consist chiefly of cotton goods, plain or printed. Large ships cannot anchor within 5 miles of the shore. In 1864 a storm-wave swept over the town, which is said to have destroyed 30,000 lives, and Masulipatam has never since regained its prosperity. Pop. 35,056.

Matabele, a Kaffir race or tribe inhabiting part of South Africa between the Limpopo and Zambesi, north of the Transvaal, into which they removed from Natal in 1827 under the leadership of their chief Moselikatse. They are a warlike people, estimated to number about 40,000. Their territory, known as Matabeleland, is now under British protection. Besides the Matabele there dwell here also numbers of the Makalaka and Mashona tribes. The country is traversed by ranges of hills and numerous streams, has good pasture, and is believed to be rich in gold. It is now being developed by British capital.

Matamorás, a town of Mexico, department of Tamaulipas, on the right bank of the Rio Grande del Norte, about 10 miles above its mouth in the Gulf of Mexico. Pop. about 12,000.

Matanzas, a seaport on the north-west coast of Cuba, 52 miles east of Havana, with one of the largest, safest, and most

convenient harbours in America. It has considerable commerce, exporting sugar, molasses, and coffee, and ranking in importance next to Havana. Pop. 87,760.

Matapan', CAPE (anciently *Tenārum Promentorium*), the most southern extremity of the Morea, Greece, and of the European continent. It terminates in a high, steep, pyramidal point, at the base of which is a volcanic cavern. Upon its summit are the ruins of a temple, probably of Poseidon.

Mataró, a town of Spain, in Catalonia, on the Mediterranean, 19 miles north-east of Barcelona. It has manufactures of linen, cotton, and woollen goods, soap, &c.; and a considerable trade. Pop. 17,405.

Matches, in the most common sense of the term, are splints or small slips of wood, one end of which is dipped into a composition that ignites by friction or other means. One of the first forms of this article was the brimstone match, which was a thin strip of resinous or dry pinewood with pointed ends dipped in sulphur, which were lighted with tinder ignited by a flint and steel. The lucifer-match was introduced in 1827, the inflammable substance being a mixture of chlorate of potash and sulphide of antimony, applied to the match, which had been previously dipped into melted sulphur. The matches were ignited by being drawn smartly through a piece of folded sand-paper. This was succeeded after a few years by the Congreve match, in which phosphorus was substituted for the sulphide of antimony. Many improvements have since been made both in the composition of the igniting materials and in the processes of manufacture. Sulphur, owing to its offensive smell, is now commonly discarded in favour of paraffin. The igniting composition is essentially an emulsion of phosphorus in a solution of gum or glue, combined with a quantity of chlorate of potash, red lead, or nitrate of lead, to increase the combustibility, and some colouring matter as cinnabar, smalt, &c. The use of common phosphorus has led to many accidental deaths and even to wilful poisoning. The operatives, also, who are exposed to the phosphoric fumes during the process of manufacture, are subject to an insidious disease (necrosis) which frequently proves fatal. Fortunately all risks whatever may be avoided by the use of amorphous phosphorus, which is an efficient substitute, and entirely innocuous.—*Safety-matches* were invented in Sweden in 1855,

and are now extensively used. In the safety-match the composition is divided between the match and the friction paper attached to the box, so that the match can only be lighted in ordinary circumstances by being rubbed on the prepared paper. The compound put on the match consists of chlorate and bichromate of potash, red-lead, and sulphide of antimony, while the friction paper is coated with a mixture of amorphous phosphorus and sulphide of antimony.—*Vestas* are a kind of matches made of a wick of fine cotton threads coated with stearine and paraffin, smoothed and rounded by being drawn through a metal plate pierced with circular holes of the desired size; the wick is then cut into vesta lengths, which are tipped with the ordinary igniting composition.—*Fusees* are made of a thick spongy paper soaked in a solution of nitre and bichromate of potash, and tipped with the usual ingredients.—*Vesuvians* are round matches of wood having a large head at each end made of a mixture of charcoal, nitre, &c., and tipped with the ordinary igniting composition.

Matchlock, an old form of musket fired by means of a match. They were invented in the first half of the 15th century, and were succeeded by the arquebus. See *Musquet*.

Mate, an officer in a merchant-ship, or ship-of-war, whose duty is to assist the master or commander, and to take, in his absence, the command. There are sometimes only one, and sometimes two, three or four mates in a merchantman, according to her size, denominated *first*, *second*, *third*, &c., mates. The law of the United States recognizes only two descriptions of persons in a merchantman—the master and mariners, the mates being included in the latter, and the captain being responsible for their proceedings. In the British navy the term is limited to the assistants of certain warrant officers, as boatswain's mate, gunner's mate, &c.

Maté (mä'tā), the plant that yields Paraguay tea, the *Ilex Paraguayensis*, a kind of holly, natural order Aquifoliaceæ. It has smooth, ovate-lanceolate, unequally serrated leaves, much branched racemes of flowers, the subdivisions of which are somewhat unbellate. In Brazil and other parts of South America the leaves are extensively used as a substitute for tea, the name *Maté* having been transferred to the plant from the gourd or calabash in which the leaves are

infused. Boiling water is poured upon the powdered leaves, then a lump of burned sugar and sometimes a few drops of lemon juice are added. Usually the infusion is sucked through a tube, sometimes of silver, having a perforated bulb to act as a strainer at the lower end. It contains theine, and acts as a slight aperient and diuretic.

Mate'ra, a town of South Italy, province of Potenza. It is the residence of an archbishop, and has a cathedral and three convents. Pop. 15,700.

Materialism, in philosophy, that system which denies the existence of a spiritual or immaterial principle in man, called the mind or soul, distinct from matter; or in a more extended sense, the doctrine that is founded on the hypothesis that all existence (including, of course, the conscious subject) may be resolved into a modification of matter.

Mate'ria Med'ica, the collective name given to the materials with which physicians attempt to cure or alleviate the numerous diseases of the human body, and which comprehend a great variety of substances taken from the mineral, animal, and vegetable kingdoms—such as mercury, antimony, arsenic, and zinc, from amongst the metallic bodies; sulphur, lime, soda, nitre, magnesia, borax, and several salts, from amongst the other minerals; and some 200 substances belonging to the animal and vegetable kingdoms.

Mathematics is the science in which known relations between magnitudes are subjected to certain processes which enable other relations to be deduced. Mathematical principles which are deduced from axioms with the help of certain definitions belong to *pure* mathematics, and those which have been deduced with the help of pure mathematics from certain simple physical laws, belong to *mixed* mathematics. Arithmetic, geometry, algebra, plane and spherical trigonometry, analytical or co-ordinate geometry, the differential and integral calculus, quaternions, the calculus of finite differences, &c., are departments of pure mathematics; the dynamics of rigid bodies and the application of its principles in astronomy and in investigating the actions of forces on ordinary matter, acoustics, the undulatory theory of light; optics, thermodynamics, electricity and magnetism, &c., are departments of mixed mathematics. See *Algebra*, *Arithmetic*, *Dynamics*, *Geometry*, &c.

Mather, COTTON, D.D., American writer, the eldest son of Increase, born in Boston 1663. He graduated at Harvard College in 1678, and in 1684 was ordained minister in Boston, as colleague of his father. He strove to maintain the ascendancy which had formerly belonged to the New England clergy in civil affairs, but which was then on the decline. In 1685 he published his *Memorable Providences relating to Witchcraft and Possessions*, which was used as an authority in the persecution and condemnation of nineteen victims burned for witchcraft at Salem in 1692. He died in 1728 with the reputation of having been the greatest scholar and author that America had then produced, his publications, some of huge dimensions, amounting to 382. Credulity, pedantry, quaintness, eccentricity are blended in most of his works with great erudition. His largest and most celebrated work is his *Magnalia Christi Americana*, or the Ecclesiastical History of New England from 1625 to 1698. His *Life* was written by his son and successor, Samuel Mather, D.D., also a learned divine and author.

Mather, INCREASE, D.D., one of the early presidents of Harvard College, was born at Dorchester, Massachusetts, 1639; graduated at Harvard in 1656; ordained a minister in 1661; president of Harvard College from 1685 to 1701. When King Charles II. signified his wish that the charter of Massachusetts should be resigned into his hands, in 1682, Dr. Mather contended against a compliance. In 1689 he was deputed to England, as agent of the province, to procure redress of grievances. He held conferences with King James II., and with William and Mary, and in 1692 returned to Boston with a new charter from the Crown, settling the government of the province. He died at Boston in 1723. His publications were 92 in number, of which his essay for the recording of *Illustrious Providences* (1684) is one of the chief. His book to prove that the devil might appear in the shape of an innocent man, enabled many convicted of witchcraft to escape death.

Mathew, REV. THEOBALD, popularly known as *Father Mathew*, Irish apostle of temperance, was born in 1790, studied at Maynooth, and was ordained a priest in 1814. Shortly afterwards he was appointed to a missionary charge at Cork, and established a society, on the model of those of St. Vincent de Paul, for visiting the sick and distressed. A more extended under-

taking was the celebrated temperance crusade, which was so successful that in a few months he had 150,000 converts in county Cork alone. A similar success attended his work in many Irish and English towns, and in recognition of this a civil list pension of £300 was bestowed on him. He died in 1856.

Mathews, CHARLES, an eminent English comedian, born in London 1776, son of a bookseller. He made his debut at Richmond in 1793, and after ten years' acting in the provinces made his first appearance in London at the Haymarket Theatre in 1803. After playing with success at the Drury Lane, Lyceum, Haymarket, Covent Garden, and various provincial theatres, he instituted, in 1818, a species of entertainment in the form of a monologue, which, under the title *Mathews at Home*, for five successive seasons drew crowded audiences to the English Opera House. In 1822 he played in America, and on his return in 1823 produced his *Trip to America*, which was as favourably received as his *At Home*. He continued both entertainments for upwards of ten years, appearing at intervals in the regular drama. In 1834 he was again enthusiastically received in America, but was taken ill on the return voyage, and died at Plymouth in 1835. His powers of mimicry have perhaps never been surpassed on the stage, while his personal qualities won him the friendship of Coleridge, Lamb, and many other eminent men.—His son CHARLES JAMES (born 1803, died 1878) long held a prominent place as a light comedian. Originally intended for an architect, his strong dramatic instinct led him to abandon that profession, and he made his first appearance on the stage at the Adelphi, London, in 1835. His first wife was Madame Vestris, the celebrated actress. In his sixty-sixth year he made a tour of the world, gaining everywhere great applause for the grace and finish and exquisite humour of his acting.

Mathura (*mat-hy-rä'*). See *Muttra*.

Matlock, a town of England, in Derbyshire, on the Derwent, 17 miles north-west of Derby, with lead-mines which employ a number of the inhabitants. Pop. 4396.—The village of Matlock-Bath, about a mile and a half distant, is a much-frequented watering-place, its medicinal springs being efficacious in bilious and rheumatic cases, gout, incipient consumption, &c. Pop. 1698.

Matrica'ria, a genus of plants of the nat. order Compositæ. See *Chamomile*.

Matrix, in mining and geology, the rock or main substance in which any accidental crystal, mineral, or fossil is embedded.

Matsys, **METSYS**, or **MASSYS**, **QUINTIN**, a Flemish painter who was originally a blacksmith, born at Louvain in 1466. It is said he quitted the forge for the pencil in consequence of having become enamoured of the daughter of a painter, whose hand was to be obtained only by a master of the same profession. He quitted his native city in 1491 and went to Antwerp, when he was made a master of the famous guild of painters of that city. He chiefly painted portraits and half-figures in common life, but sometimes undertook great works, of which a Descent from the Cross, in the cathedral of Antwerp, is a favourable specimen. His picture of the Two Misers, at Windsor, is also much admired. He died in 1529.

Matter, that which occupies space, and through which force is manifested. It is also that which makes itself known to us by our bodily senses, though there is believed to exist one kind of matter at least which is too subtle to be perceived by the senses, namely, the intermolecular and interstellar ether. Roughly speaking, matter exists in one of three states, solid, liquid, or gaseous, but these are not marked off by any distinct line. Matter is commonly regarded as the antithesis of mind.

Matterhorn. See *Cervin*.

Matthew, **ST.**, evangelist and apostle, son of Alpheus; previous to his call a publican or officer of the Roman customs, and, according to tradition, a native of Nazareth. After the ascension of Christ we find him at Jerusalem with the other apostles, but this is the last notice of him in Scripture. Tradition represents him as preaching fifteen years in Jerusalem, then visiting the Ethiopians, Macedonians, Persians, Syrians, &c., and finally suffering martyrdom in Persia. His Gospel has been supposed by some critics to have been originally written in Hebrew, or rather Aramaic, but it is only found in Greek. The chief aim of this Gospel is evidently to prove the Messianic character of Jesus. See *Gospel*.

Matthew of Westminster, an old English chronicler, a Benedictine monk of the Abbey of Westminster, who lived in the 14th century. His chronicle, extending from the creation to 1307, was entitled by him *Flores Historiarum* (Flowers of Histories), whence his name of *Florilegus*. The work is very freely transcribed from Matthew Paris.

Matthi'as Corvi'nus, King of Hungary, second son of John Hunniades. The enemies of his father kept him imprisoned in Bohemia, but in 1458, at the age of sixteen years, he was called to the throne of Hungary. He maintained his position against Frederick III., repelled the invading Turks, and between 1468 and 1478, conquered Silesia, Moravia, and Lusatia; he was also victorious over the Poles, and took the greater part of Austria, including Vienna, from Frederick, and held all his extensive conquests till his death. He encouraged science and scholarship, and collected a great library (afterwards destroyed by the Turks) at Buda. He died in 1490.

Matto-Grosso (Great Forest), the most western and second largest province of Brazil, bordering on Paraguay and Bolivia; area, 532,445 square miles. The dense forests which cover a great part of the surface abound with inexhaustible supplies of the finest timber, and yield valuable gums, balsams, and medicinal plants. Gold, diamonds, and other gems are obtained. Little of the soil is as yet under cultivation. Pop. (exclusive of Indians), 79,750.

Mattoon, **COLES CO.**, **ILL.**, 172 miles S. W. of Chicago, on three railroads; has several mills and car-works, and factories. Pop. 1890, 6833.

Maui, one of the Sandwich Islands (which see).

Maulmain. See *Moulmein*.

Mauna Loa, a celebrated volcano in the Sandwich Islands near the centre of Hawaii, height 13,600 feet.

Maund, an East Indian weight varying greatly in different places. In Bengal it is 80 lbs., in Bombay 28, in Madras 25.

Maundy-Thursday, the Thursday in the Passion week. It used to be the custom in England and other countries, and still is in Austria, for the sovereign to wash the feet of a certain number of poor persons, and make them presents on this day; and in Rome the pope washes the feet of some of the bishops. The ceremony commemorates Christ's washing of the apostles' feet.

Maupertuis (*mō-pār-twē*), **PIERRE LOUIS MOREAU DE**, French mathematician and philosopher, born at St. Malo in 1698. After four years' service in the army, he was in 1723 received into the Academy of Sciences. He then visited England and Switzerland, and became a pupil of Newton. In 1736 he conducted a scientific expedition to Lapland for the purpose of measuring an

arc of the meridian. In 1740 he accepted an invitation from the King of Prussia to settle at Berlin, where, in 1746, he was declared president of the Academy of Sciences. He died at Basel in 1759.

Maura, SANTA. See *Leucadia*.

Maurepas (mōr-pä), JEAN FRÉDÉRIC PHÉLIPPEAUX, COUNT DE, French statesman, born in 1701. At the age of twenty-three years he became minister (by inheritance) of the French marine. An epigram on Madame de Pompadour led to his banishment from the court in 1749, but Louis XVI. recalled him in 1774, and placed him at the head of his ministry, and he retained the confidence of the king till his death in 1781. The restoration of the parliaments was the principal measure of his later ministry.

Maurice, OF SAXONY, COUNT. See *Saxe*.

Maurice, JOHN FREDERICK DENISON, an Anglican divine and prominent leader of the Broad Church party, son of a Unitarian minister, was born, in 1805, at Normanston, Suffolk. In 1823 he entered Trinity College, Cambridge, where he declined a fellowship on the ground that he could not sign the Thirty-nine Articles. In 1828 he settled in London, and applied himself to literature, his first work of any extent being *Eustace Conyers*, a novel (1834). He also contributed, along with John Sterling, to the *Athenæum*, then recently started. A change in his religious sentiments, however, induced him to become a clergyman of the Church of England (1835), and in 1836 he was appointed chaplain to Guy's Hospital, a post which he kept for ten years. In 1840 he became professor of modern history and English literature in King's College, London, and in 1846 professor of ecclesiastical history, but in 1853 the publication by him of an essay on future punishment, necessitated his resignation of both chairs. In 1854 he founded the first working-man's college in London, of which he became principal. In 1860 he was appointed perpetual curate of St. Peter's, Vere Street, Cavendish Square, and in 1866 professor of moral philosophy at Cambridge, a position which he held until his death in 1872. Besides the books above mentioned, he published several volumes of sermons, and treatises on the History of Moral and Metaphysical Philosophy, the Religions of the World, the Prophets and Kings of the Old Testament, Patriarchs and Lawgivers of the Old Testament, the Kingdom of Christ, the Doctrine of Sacrifice, Lectures on the Ecclesiastical

History of the First and Second Centuries, &c.

Maurice of Nassau, Prince of Orange, stadtholder of the Netherlands, the youngest son of William the Silent, was born 1567. He was elected stadtholder of the provinces of Zeeland and Holland on the assassination of his father in 1585, and subsequently of Utrecht, Overijssel, and Gelderland; and as commander of the army of the Netherlands he carried on war against the Spaniards with extraordinary success, driving them entirely out of the United Provinces. Previous to the truce of twelve years, concluded in 1609, when Spain was compelled to acknowledge the United Provinces as a free republic, about forty towns and several fortresses had fallen into his hands. He had defeated the Spaniards in three pitched battles, besides the naval victories which were gained by the vice-admirals of the republic on the coasts of Spain and Flanders. In 1621 the war with Spain was renewed, but the superior force under Spinola compelled Maurice to act upon the defensive only. He died at the Hague in 1625, and was succeeded by his brother Frederick Henry.

Mauricius, FLAVIUS TIBERIUS, one of the greatest Byzantine emperors, was born about 539 A.D. He distinguished himself in war against the Persians, obtaining by his complete victory over them in 581, the honour of a triumph at Constantinople. On the death of the Emperor Tiberius, whose daughter he had married, he ascended the throne (582). The war with the Persians continued with varying success, but was brought to a close in 591 by the appeal of the Persian king, Chosroes, to the Byzantines for aid against a rebel general. A defeat of the Byzantines by the Avars, and the massacre of the Byzantine prisoners, whom Mauricius declined to ransom, led to a revolt of his troops on the Danube. They marched on Constantinople under Phocas, who was proclaimed emperor (602), and Mauricius was seized and executed in 603.

Mauritania, or MAURETANIA, the ancient name of the north-western portion of Africa, corresponding in its area to the present Morocco and the western part of Algeria. The ancient boundary of Mauritania on the south was the Atlas. In A.D. 40 it became a Roman province. From 429 to 534 A.D. it was held by the Vandals, and in 650 A.D. it was conquered by the Arabs.

Mauritia (or BURITI) Palm (*Mauritia vinifera*), called also the Brazilian wine

palm, one of the tallest of the palms, rising to a height of 100–150 feet with a diameter of only 2 feet, and bearing an imposing crown of immense fan-shaped leaves with long foot-stalks. It grows in marshy spots. From the juice of the stem and of the fruit a sweet vinous liquor is prepared. The fruit is of the size of a hen's egg. To the same genus belongs the fan-palm of the Orinoco (*M. flexuosa*), which furnishes the Guarani Indians with all the necessities of life.

Mauritius, or **ISLE OF FRANCE**, an island in the Indian Ocean, a colony of Great Britain, 400 miles east from the island of Madagascar. It is of an oval form, about 40 miles long from north-east to south-west, and 25 miles in breadth, and is surrounded by coral-reefs. It is composed chiefly of rugged and irregular mountains, the highest, the Montagne de la Rivière Noire, 2700 feet, and the isolated rock Peter Botte, 2600 feet. Between the mountains, however, and along the coast, there are large and fertile plains and valleys, having a rich soil of black vegetable mould or stiff clay. The climate is pleasant during the cool season, but oppressively hot in summer, and the island is occasionally visited by severe epidemics. In its vegetation Mauritius resembles the Cape in the number of succulent plants, cactuses, spurge, and aloes. The principal objects of cultivation are sugar, rice, maize, cotton, coffee, manioc, and vegetables. The exports include sugar (much the largest), rum, vanilla, aloe fibre, cocoa-nut oil. The imports consist of rice, wheat, cattle, cotton goods, haberdashery, hardware, &c. The exports and imports are each valued at over £2,000,000 annually; the revenue is about £700,000. The government is vested in a lieutenant governor and legislative council. The island has two railways crossing it, in all 87 miles. Mauritius was discovered in 1505 by the Portuguese. The Dutch took possession of it in 1598, and named it after Prince Maurice. After occupation by the French it was captured by Britain in 1810. Principal towns, Port Louis and Mahébourg. May, 1892, it was visited by a terrible hurricane, one-third of Port Louis being destroyed. Pop. 368,163, two-thirds of whom were originally coolies imported to work the sugar estates.

Maury, **MATTHEW FONTAINE**, LL.D., American naval officer and hydrographer, was born in Virginia, 1806, and entered the United States navy in 1825. In 1839 he

was lamed by an accident, and quitted active service afloat for scientific work at the Washington Observatory. He wrote valuable papers on the Gulf Stream, ocean currents, great circle sailing, &c., and his *Physical Geography of the Sea*, published in 1856, gave him a wide reputation. In 1861 he resigned his appointment at the Washington Observatory and entered the Confederate service, in which he obtained the rank of commodore. After the termination of the war he went to Mexico, Russia, and England, and in 1868 became professor of physics in the Virginia Military Institute. He died in 1873.

Mausole'um (Greek, *mausoleion*), a sepulchral monument, so named from Mausolus, a king of Caria, to whom his wife Artemisia erected a monument which became so famous as to be esteemed the seventh wonder of the world, and to give a generic name to all superb sepulchres. From Pliny we learn that its height was 140 feet. In modern times the term is applied generally to a sepulchral edifice erected for the reception of a monument, or to contain tombs.

Mauvaises Terres, 'bad lands,' the name given to desolate tracts of land in various parts of the western states of North America; more especially to a barren region in Dakota along the White River, an affluent of the Missouri.

Mauve, a beautiful purple dye obtained from aniline, used for dyeing silks, &c. In silk and wool the colours are permanent without the use of mordants.

Mavis. See *Thrush*.

Mavrocorda'to, **ALEXANDER**, **PRINCE**, a Greek politician and diplomatist, born at Constantinople 1791, died 1865. He took part in the Greek movement for freedom (1821); prepared the declaration of independence; became president of the Executive Council; and successfully defended Missolonghi (1822). When Otho was placed on the Greek throne by the European powers Mavrocordato became his financial minister, and he was afterwards ambassador to Munich, London, and Berlin. During the insurrection of 1843–44 he was president of the Constitutional Assembly, and at the outbreak of the Crimean war he became head of the Greek government.

Maxen'tius, **M. AURELIUS VALERIUS**, a Roman emperor, 306–312, A.D., son of Maximianus, and son-in-law of Galerius, whom he deposed. He reigned along with his father for a short time; was defeated by

Constantine in 312, and in the retreat drowned in the Tiber.

Maxil'la (Latin, *maxilla*, a jaw), the term applied in comparative anatomy to the upper jaw-bones of Vertebrates, in contradistinction to the mandible or lower jaw; and in Invertebrata to the second or lesser pair or pairs of jaws. Thus in insects, spiders, crustaceans, &c., the maxillæ form definite and important organs in the trituration and division of food.

Maximianus, MARCUS AURELIUS VALERIUS HERCULIUS, a Roman emperor, who became colleague of Diocletian in the empire 286 A.D. He endeavoured to murder his rival Constantine, to whom he had given his daughter Faustina in marriage, and being frustrated by the fidelity of the latter, strangled himself 310. He was the father and contemporary of Maxentius.

Maximilian I., Emperor of Germany, son of the Emperor Frederick III. and of Eleonora of Portugal, was born in 1459; in 1486 was elected king of the Romans, and emperor



Maximilian I.

in 1493. He first became an independent prince by his marriage with Mary of Burgundy, the daughter of Charles the Bold, who was killed in 1477. This match involved him in a war with Louis XI., king of France, in which he was successful, though he was defeated at a later period by the Milanese. He died in 1519, and was succeeded by his grandson Charles V. See *Germany*.

Maximilian II., Emperor of Germany, born 1527, died 1576. He succeeded his father, Ferdinand I., in 1564; was tolerant of the Reformation, but did not join the Protestant church.

Maximilian, Emperor of Mexico, known

in his earlier life as FERDINAND MAXIMILIAN JOSEPH, Archduke of Austria, born at Vienna, 1832, was the younger brother of Francis Joseph I. of Austria. In 1863 he was induced by the Emperor Napoleon, and also by a deputation of Mexican notables, to accept the throne of Mexico. With this intention he entered Mexico in June, 1864. Maximilian was at first extremely popular; yet he failed to conciliate either the church party or the republicans, and the latter, under Juarez, rose in revolt. Having become involved in financial and political difficulties, Maximilian, with the approval of Napoleon, resolved to abdicate (1866), and he had proceeded to Orizaba when he was induced to return by the Conservative party in the state. The fighting which followed culminated in the capture and execution of the emperor and two of his chief generals, 19th June, 1867.

Maximilian Joseph, King of Bavaria, born 1756, died 1825. He married his daughter to Eugene Beauharnais, son of Napoleon's wife Josephine, and had his duchy raised to a kingdom in 1806. In 1813 he joined the league against France.

Maximi'nus, CAIUS JULIUS VERUS, Roman emperor, the son of a peasant of Thrace. He entered the Roman army under Septimus Severus before 210, and gradually rose in rank until, on the death of Alexander Severus, he caused himself to be proclaimed emperor, A.D. 235. He was successful in his German campaigns, but his acts of barbarity and tyranny provoked an insurrection, in the attempt to quell which he was assassinated by his own soldiery, A.D. 238. The emperor is represented as being of immense stature and strength.

Maximum is the greatest quantity or degree fixed, attainable, or attained, in any given case as opposed to *minimum*, the smallest. In mathematics and physics maximum is used also for the value which a varying quantity has at the moment when it ceases to increase and begins to decrease.

Maxwell, JAMES CLERK, F.R.S., born at Kirkcudbright 1831, died 1879. He was educated at Edinburgh and Trinity College, Cambridge, where in 1854 he was second wrangler. He held the professorship of natural philosophy in Marischal College, Aberdeen, in 1856-60; afterwards the chair of physics and astronomy in King's College, London, 1860-68, and the professorship of physics in Cambridge from 1871 until his death. He published treatises on Electri-

city and Magnetism, The Theory of Heat, Matter and Motion, &c.

Maxwell, SIR WM. STIRLING, BART., born 1818, died 1878. He was educated at Cambridge; travelled afterwards in France and Spain; entered parliament in 1852, and in 1875 was elected chancellor of Glasgow University. His best known works are *Annals of the Artists in Spain* (1848); *The Cloister Life of Charles V.* (1852); *Velasquez and his Works* (1855); and a posthumous volume on Don John of Austria.

May, fifth month in the year, but third in the old Roman calendar, has thirty-one days. The Romans regarded it as unlucky to contract marriages during its course—a superstition still prevalent in some parts of Europe. On the 1st of May the old Celtic peoples held a festival called *Beltane* (see *Beltane*). In former days out-door sports and pastimes on the first of May were very common, and are not yet entirely given up. They included the erection of a *May-pole* decorated with flowers and foliage, round which young men and maidens danced, one of the latter being chosen for her good looks as queen of the festival, or 'Queen of the May.'

May, THOMAS ERSKINE, born 1815, died 1886. He became assistant librarian to the House of Commons in 1831; examiner of petitions 1846; assistant-clerk 1856; and clerk in 1871. He was created C.B. in 1860, and K.C.B. in 1866. He was the author of *A Treatise on the Law, Privileges, Proceedings, and Usage of Parliament* (1844); *The Constitutional History of England since the Accession of George III.* (1760–1860); and a history of Democracy in Europe (1877). He was latterly created Baron Farnborough.

Mayaguez (mā-yā'gwes), a seaport town on the west coast of the W. Indian island of Puerto Rico. Pop. 12,000.

May-apple, a plant, *Podophyllum peltatum*, natural order Berberidaceæ (barberries). It is a native of North America, and its creeping root-stalk affords an active cathartic medicine known as *podophyllin*. The yellowish pulpy fruit, of the

size of a pigeon's egg, is slightly acid, and is sometimes eaten.

Mayas, a race of Indians inhabiting Yucatan and the adjacent regions of Mexico and Central America, believed to be the descendants of those who built the great ruined cities of these parts.

Maybole, police burgh, Ayrshire, Scotland, 49 miles s.s.w. by rail from Glasgow. It contains an old castle, at one time the town residence of the Ailsa family. Shoemaking is the chief industry, the factories employing over 1000 hands. Pop. 6628.

Mayence (mā-yāns). See *Mainz*.

Mayenne (mā-yen), a department of north-western France, named from the small river Mayenne, which joins with the Sarthe to form the Maine; area, 1996 square miles. The surface is rather hilly or broken, but the soil is good and yields corn, flax, hemp, apples, &c. Coal and slate are obtained in small quantities. Laval is the capital. Pop. 1891, 332,387.

Mayenne, a town of France, in the above department, on a river of same name, 17 miles N.N.E. of Laval. Its principal edifices are two churches, a town-house, and a picturesque old castle. Pop. 9949.

May-fly. See *Ephemera*.

Mayhew, HENRY, born at London 1812, died 1886. He was educated at Westminster school; made a voyage to Calcutta on a ship of war; returned and entered the law office of his father; joined the literary profession as author of the farce *The Wandering Minstrel*; and started a comic paper called *Figaro* in London, which was succeeded by *Punch* (1841), of which he was one of the promoters. He was a versatile writer of tales, farces, and humorous fictions, but his best known work is *London Labour and the London Poor*.—His brother HORACE (1819–72) was on the *Punch* staff, and published several humorous works. Three other brothers, Thomas, Edward, and Augustus, were known in the literature of their day.

Maynooth, market town, Kildare, Ireland, 13 miles w.n.w. of Dublin. It has a Protestant and a Roman Catholic church, and the well-known college of St. Patrick (see next article). Pop. 1727.

Maynooth College, or ST. PATRICK'S COLLEGE, the chief college of the Catholic University of Ireland, was founded in 1795 by an act of the Irish parliament, for the education of the Irish Roman Catholic clergy. The annual vote from the British parliament



May-apple (*Podophyllum peltatum*).

for its maintenance was changed in 1845 to a permanent endowment of £26,000, and a sum of £30,000 for new buildings granted, while this again was commuted by the Irish Church Act (1869) for a slump sum of £372,276. All the students are destined for the priesthood, and all are resident within the building. The full curriculum is seven years, one of which is devoted to classics, two to philosophy, and the remaining four to theology and cognate subjects. The foundation consists of a president, vice-president, four deans, a bursar, twelve professors, a librarian, a lecturer on elocution, and an organist and lecturer on ecclesiastical music. The college buildings consist of an old and a new quadrangle, the latter a fine Gothic structure.

Mayo, a western maritime county of Ireland, in Connaught; area, 1,360,731 acres, of which about an eighth is under tillage. Its principal bays are Killala Bay, Broadhaven, Blacksod, and Clew Bay, and its chief islands, Achill, Clare, Inishturk, and Innisboffin. The county is in many parts extremely mountainous, its highest summit reaching 2680 feet. The principal river is the Moy, and the largest lakes are Conn and Mask, the latter only partly in the county. Iron ore abounds, but remains unwrought; there are several valuable slate-quarries. Oats form the chief crop; and barley, bere, rye, potatoes, and turnips are grown; but pasturage is more attended to than tillage. The fisheries are productive. The county returns four members to parliament. Principal towns, Castlebar (the county town), Ballina, and Westport. Pop. 218,406.

Mayo, RICHARD SOUTHWELL BOURKE, SIXTH EARL OF, born 1822; educated at Trinity College, Dublin; travelled in Russia and published the result in a work on St. Petersburg and Moscow (1845); entered parliament in 1847 under the title of Viscount Naas; was made chief secretary for Ireland under the Derby administrations (1852-68). He succeeded to the earldom in 1867, and was appointed viceroy of India by Mr. Disraeli in 1868. After a successful career in this capacity, he was assassinated at Port Blair in the Andamans by a Mohammedan convict in 1872.

Mayor, the chief magistrate of a city or corporate town in England, Ireland, the British colonies, and the United States; in Scotland called *provost*. In the United States the mayor is elected by the qualified voters of the city or town for a certain term

of years. The power and authority which mayors possess, being given to them by local regulations, vary in different places. The Mayors of London, York, and Dublin are each called 'lord-mayor'; the Lord-mayor of London having the further title of 'right honourable,' first allowed in 1354 by Edward III.

Mayotte, or MAYOT'TA, an island in the Indian Ocean, one of the Comoros, at the north-east entrance of the Mozambique Channel, and a French colony. It is about 30 miles long by 20 miles broad, and some of its volcanic peaks are nearly 2000 ft. high. Pop. 10,049.

Maysville, Mason co., Ky., is an extensive hemp market. Pop. 1890, 5358.

May-weed, a European plant (*Anthēmis Cotula*), natural order Compositæ. It is a troublesome weed in corn, and difficult to eradicate. It has daisy-like flowers, finely divided leaves, and an unpleasant smell, and sometimes blisters the hands of reapers.

Mazamet (mā-zā-mā), a town, France, department of Tarn, on the Arnette, 32 miles S.S.E. Alby. It has manufactures of coarse woollens, flannels, and moleskins. Pop. 10,939.

Mazanderan, or MAZENDERAN, a province of Persia, bounded on the north by the Caspian. Along the Caspian Sea the land is flat and fertile, but southward it rises rapidly into the spurs of the Elbruz Mountains. Sugar-cane, rice, cotton, and mulberry trees grow luxuriantly. The capital is Sari, and the population of the province is estimated at 300,000.

Mazarin (mā-zā-ran), JULES, or GIULIO MAZARINI, first minister of Louis XIV. and cardinal, an Italian by origin, born in 1602, died 1661. He was educated at Rome by the Jesuits, thence proceeded to the University of Alcalá in Spain; entered the pope's military service, and distinguished himself by diplomatic ability, for which he was rewarded with two canonries, and the appointment of nuncio to the court of France (1634-36). Here he gained the favour of Richelieu; accepted service from the king, and became a naturalized citizen of France; was made a cardinal in recognition of his diplomatic services in Savoy; and in 1642, when Richelieu died, Mazarin promptly succeeded him. On the death of Louis XIII. the queen, Anne of Austria, became regent for her young son, Louis XIV., and it was thought that Mazarin would be dismissed; but instead

he gained over the queen-regent, and made himself master of the nation. Two parties in the state rebelled against this usurpation of supreme power by the cardinal. The parliament of Paris denounced his increasing taxation, while the nobility dreaded his supremacy, and the combination of these malcontents resulted in the civil war of the Fronde (which see). As the immediate result of the conflict, Mazarin had to go into exile, but through means of intrigue he formed a powerful royal party in the state, gained General Turenne to his cause, and finally returned to his position at court in 1653. During the succeeding eight years he remained all-powerful in France; pursued the policy of Richelieu in foreign affairs; made an alliance with Cromwell; brought the Rhine provinces under the headship of France, and in the treaty of the Pyrenees humiliated Spain, and gained much of French Flanders. Just as his foreign policy was successful, so was his home policy disastrous. He did nothing for the people but increase their taxes to fill an impoverished exchequer. Yet when he died Mazarin left an enormous fortune to his nieces, whom he had married into the most powerful families of Italy and France.

Mazarron (mâ-thâr-rôn'), a town of Southern Spain, prov. Murcia, near the Mediterranean, on which it has a harbour. Pop. 11,002.

Mazatlan', a seaport in Mexico, in the state of Sinaloa, at the entrance into the Gulf of California. It forms the outlet for the gold and silver of the neighbouring mines, and imports considerable quantities of English goods. Pop. 16,000.

Mazep'pa, JOHN, Hetman of the Cossacks, born about 1645. He became page to the King of Poland, and being detected in an intrigue with a Polish lady of high rank, Mazeppa was bound naked upon an untamed horse by her husband, and cast loose. He was found and released by some peasants, and afterwards joined the Cossacks, where his skill, sagacity, and strength procured him the position of hetman in 1687. He gained the confidence of Peter the Great, who made him prince of the Ukraine; but having entered into a treasonable intrigue with Charles XII. he suffered defeat with the Swedish monarch at Pultawa, fled to Bender, and there died in 1709. He is the hero of a poem by Lord Byron, and a drama by Pushkin.

Mazur'ka, or MAZOUR'KA, a lively Polish round dance in $\frac{3}{8}$ or $\frac{3}{4}$ time, and generally danced by four or eight pairs. It is quicker than the polonaise. The name is also applied to the music.

Mazzara (mât-sâ'râ), a seaport and cathedral town of Sicily, on the south coast of the western extremity, surrounded by Moorish walls. Pop. 13,074.

Mazzarino (mât-sâ-rē'nō), a town of Sicily, prov. Caltanissetta. Pop. 12,964.

Mazzini (mât-sē'nē), GIUSEPPE, Italian patriot, born at Genoa 1805, died at Pisa 1872. His father was a physician and a professor in the university, and Mazzini studied with a view to follow this profession, but afterwards took a new bent and graduated (1826) in law. While he was an advocate he turned his attention to literature, his first significant essay being Dante's Love of Country. As his writings grew more distinctly liberal in their politics the government suppressed the *Indicatore Genovese* and the *Indicatore Livornese*, the papers in which they appeared. He afterwards joined the Carbonari, and was imprisoned in Savona for some months. On his release (1832) he was exiled to Marseilles, but he was compelled by the French government to retire into Switzerland. During the following five years he planned and organized various unsuccessful revolutionary movements, until, in 1837, he was expelled by the Swiss authorities and sought refuge in London. During the revolutionary movements of 1848 he proceeded to Italy; served for a time under Garibaldi, and when the pope fled from Rome he became president of its short-lived republic, made a heroic defence of the capital against the French, until compelled to surrender. From that time he continued to organize various risings in Italy, and the successful Sicilian expedition of Garibaldi in 1860 was due largely to his labours. When Italian unity was accomplished under a monarchy Mazzini accepted the results with reserve. The latter part of his life was spent chiefly between London and Lugano. He was buried at Genoa.

Mazzola (mât-sō'là), or MAZZUOLI (mât-sū-ō'lē), GIROLAMO FRANCESCO MARIA (called *Il Parmigiano*, the Parmesan), a painter of the Lombard school, born at Parma 1503, died 1540. His earliest works were in the style of Correggio, but in his twentieth year he went to Rome, where he came under the influence of Raphael and Michael Angelo, and was patronized by Clement VII. After the

sack of Rome in 1527 he went to Bologna. His paintings are numerous, both fresco and easel. He was the earliest Italian etcher, and many of his engravings yet exist.

Meade, GEORGE GORDON, soldier, was born in Cadiz, Spain, in 1815. He served in the Mexican and Seminole wars. In the civil war he was especially distinguished. In 1863, as commander of the army of the Potomac, at Gettysburg, he checked Lee's invasion of Pennsylvania. He was in every battle but two fought by the Army of the Potomac. He died in 1872.

Meadow-grass, the common name of several British grasses of the genus *Poa*. The *P. pratensis*, or smooth meadow-grass, is one of the most common of agricultural grasses.

Meadow-sweet, a well-known handsome British plant, *Spiraea Ulmaria*, nat. order Rosaceæ. It grows by the sides of streams and in damp places, has pinnate leaves, and stems two feet high bearing corymbs of white fragrant flowers. In the United States, the Roughish meadow-grass, *Poa trivialis*, is an excellent and abundant grass, both for hay and pasturage.

Meadville, a town of the United States, in the north-west of Pennsylvania, the seat of Allegheny College (Methodist Episcopal) and a Unitarian theological school. Pop. 1890, 9520.

Meal-worm, the larva of a beetle (*Tenebrio molitor*), which infests granaries, corn-mills, bake-houses, &c., and is very injurious to flour, meal, and the like.

Mean, in mathematics, a quantity having a value intermediate between those of two other quantities. The arithmetical mean between two quantities is equal to half their sum; the geometrical mean to the square-root of their product; and the harmonic mean to twice their product divided by their sum.

Meanee. See *Miani*.

Mearns, THE. See *Kincardineshire*.

Measles, also called RUBE'OLA, an acute infectious fever, chiefly affecting children. In a period of from ten to fourteen days after contagion symptoms of the disease begin to appear in sneezing, watering of the eyes, hoarseness, a hard cough, and high temperature. On the fourth day of the fever a rash appears in blotches, crescentic in form, first upon the temples, and gradually extends over the whole surface of the body. It begins to fade about the seventh day. The complications most to be dreaded are inflammations of the mucous membranes of the eye and chest. The

treatment consists in keeping the patient confined to bed in a warm room, relieving the chest by hot bathing or warm packing, and preventing constipation. During convalescence give good nourishing food.

Measures. See *Weights and Measures*.

Meath (mēth), a county of Ireland, province of Leinster, abutting on the Irish Sea; area, 579,861 acres. Its coast-line of 7 miles is low and sandy; there is no good harbour; the surface is generally level; and the principal rivers are the Boyne and the Blackwater. The land is mostly laid out in grass. Some coarse linens are manufactured, and there are one or two woollen factories. The county returns two members to parliament. Principal towns, Navan and Kells. Meath contains the royal seat, 'Tara of the kings,' the scene of St. Patrick's first preaching of Christianity. Pop. 1891, 76,616.

Meaux (mō), a town of France, department Seine-et-Marne, on the Marne, 24 miles E.N.E. of Paris. It has a fine Gothic cathedral, an episcopal palace, town-house, college, diocesan seminary, &c. Pop. 12,291.

Mecca, or MEKKA, a city of Arabia, about 60 miles from Jidda, its port on the Red Sea, and the birth-place of Mohammed, consequently the holiest city of the Mohammedan world. It stands in a narrow sandy valley, inclosed by sterile hills, and is ill-supplied with water. In its centre is the Beitu'llah (house of God), or El-Haram (the inviolable)—the great mosque inclosing the Kaaba, occupying a square dividing the upper from the lower town. The city is annually filled at the time of the Hajj or pilgrimage to the Kaaba (which see), when apartments in almost every house are hired to strangers. This pilgrimage, enjoined by Mohammed on all his followers, is the sole foundation of Mecca's fame, and the only source of its wealth and occupation. A number of the inhabitants claim to be Sherifs, or direct descendants of Mohammed, and the city is under a grand Sherif. It is dangerous for an infidel to visit Mecca, but R. F. Burton visited it in disguise in 1853. The pop. is estimated at 50,000, with the periodical addition of from 100,000 to 150,000 pilgrims.

Méchain (mā-shāṅ), PIERRE FRANÇOIS ANDRÉ, French astronomer, born 1744, died 1804. His name is notably connected with the measurement of a degree of the meridian in order to get a natural basis for the new French decimal system of weights and measures.

Mechanical Powers, the simple instruments or elements of which every machine, however complicated, must be constructed; they are the lever, the wheel and axle, the pulley, the inclined plane, the wedge, and the screw. See those terms.

Mechanics, the term originally used to denote the general principles involved in the construction of machinery. Latterly the term became divorced from all direct connection with practical applications, and dealt entirely with abstract questions in which the laws of force and motion were involved. In this sense mechanics is usually divided into *dynamics*, which treats of moving bodies and the forces which produce their motion; and *statics*, which treats of forces compelling bodies to remain at rest. See *Dynamics*, *Statics*.

Mechitarists (me-kit'a-rists), a society or sect of Armenian Christians acknowledging the authority of the pope, but retaining their own ritual with a few alterations. They have printed the best editions of Armenian classics. The name originated from *Mechitar* Da Petro, who founded a religious society at Constantinople for the purpose of disseminating a knowledge of the old Armenian language and literature.

Mechlin (mek'lin; French, *Malines*; Flemish, *Mechelen*), a town of Belgium, on the Dyle, in the province and 14 miles S.S.E. of Antwerp. Its principal edifices are its cathedral, an ancient Gothic structure, the church of Notre Dame, the church of St. Peter and St. Paul, and the archbishop's palace. The manufactures consist of the famous Mechlin lace, felt and straw hats, woollen stuffs, &c. Pop. 47,670.

Mecklenburg-Schwerin, a grand-duchy of the German Empire; bounded on the north by the Baltic Sea, elsewhere chiefly by Prussia and Mecklenburg-Strelitz; area, 5135 square miles; capital, Schwerin (pop. 33,643). The surface is flat, except where a ridge of low hills forms the watershed between the Elbe and the Baltic. The sea-coast is indented by several inlets, and lakes are very numerous. The streams flow partly to the Elbe, partly to the Baltic. The chief products are corn, pease, beans, potatoes, beet, and turnips. Both horses and cattle are exported. Distilling is largely carried on. The government is intimately connected with that of Mecklenburg-Strelitz. Each duchy has a separate legislative body, but both meet annually, and legislate for the whole of Mecklenburg. Pop. 1890, 578,342.

Mecklenburg-Strelitz, a grand-duchy of the German Empire; capital, Neu-Strelitz (pop. 8520). It consists of two larger and several smaller districts; the former separated by the interposition of Mecklenburg-Schwerin, and the latter existing in separate patches. The whole area is estimated at 1052 square miles. The physical features and general character of this duchy are similar to those of Mecklenburg-Schwerin (which see). Pop. 1890, 98,371.

Mecon'ic Acid, an acid with which morphia is combined in opium. When pure, meconic acid ($C_7H_4O_7$) forms small white crystals. Its aqueous solution forms a deep red colour with the persalts of iron, which therefore are good tests for it.

Medallion, a term applied to the large antique medals struck in Rome and in the provinces by the emperors. They were usually of gold or silver, and exceeded in size the largest coins of these metals of which the name and value are known. They were probably struck to commemorate persons or events. In architecture the term is applied to any circular or oval, and sometimes square tablet, bearing on it objects represented in relief, as figures, heads, animals, flowers, &c.

Medals. See *Numismatics*.

Mede'a, in Greek mythology, daughter of Æetes, king of Colchis, on the eastern coast of the Black Sea. She enabled Jason to obtain the celebrated golden fleece (which see), and lived with him for ten years, until he discarded her in favour of Glauce or Creusa, daughter of King Creon. In revenge she sent Glauce a bridal robe which enveloped her in consuming flame, and thereafter she slew her own children by Jason. There are many versions of this Greek myth, and it has been a favourite theme with painter and dramatist. Euripides has a well-known tragedy of this name. See also *Jason*, *Argonauts*.

Medellin (me-del-yēn'), a city of Colombia, capital of the department and 40 miles south-east of Antioquia. Pop. 20,000.

Medford, Middlesex co., Mass., 6 m. N. W. of Boston, is the seat of Tufts College. Pop. 1890, 11,079.

Media, an ancient country in Western Asia, formerly the seat of a powerful kingdom, corresponding nearly to the north-western portion of modern Persia. According to the Greek historians Deioces, B.C. 708-655, was the first native king, but the true founder of the great Medean monarchy

was Cyaxares, 633-593 B.C. He extended his dominion over the highlands of Southern Armenia and Asia Minor as far as the Halys, overthrew the Assyrian monarchy, and in conjunction with Nabopolassar, king of Babylon, destroyed Nineveh 607 or 606 B.C. Astyages, the successor of Cyaxares and the last king, reigned for thirty-five years, B.C. 593 to 558, when he was overthrown or deposed by Cyrus. He is supposed by some authorities to be the Darius the Mede mentioned in the Book of Daniel as reigning over Babylon after its conquest by the Persians. The Medes and Persians, from their near resemblance to each other, appear to have amalgamated readily after the conquest or revolution which gave the ascendancy to the latter. Media henceforward formed part of the Persian Empire, and shared its fate.

Me'diastine, Mediasti'num, the membranous septum of the chest, formed by the duplicature of the pleura under the sternum, and dividing the cavity into two parts.

Mediatization, the term applied to the annexation of the smaller German sovereignties to larger contiguous states, which took place on a large scale after the dissolution of the German Empire in 1806.

Medical Act, an act for the registration of medical practitioners, passed 2d August, 1858, and amended by subsequent acts. The act establishes a general council for the United Kingdom, with branch councils for England, Scotland, and Ireland. The members are appointed by the crown, the medical and surgical corporations, and the universities. They are appointed for a term of five years, and are eligible for re-election. The chief function of the councils is to register such persons as are qualified to practice medicine or surgery in the three kingdoms; and any fellow, licentiate, or extra-licentiate of any of the medical bodies named in the act, or possessing any of the qualifications scheduled in the act, is entitled to be registered on payment of a fee of £5. The general council has power to remove the name from the register of any person who has been guilty of crime or of malpractices in his profession. Further, any person who obtains registration by false statements is liable to be imprisoned for 12 months, and anyone falsely claiming to have been registered is liable to be fined £20. The registrar of the general council publishes annually The Medical Register, containing the names of all persons appear-

ing on the general register on 1st January in each year. Registered persons are entitled to practice medicine and recover medical fees in all parts of the United Kingdom. The council also publish the British Pharmacopœia, a list of medicines and compounds and the manner of preparing them.

Medical Jurisprudence. See *Forensic Medicine*.

Medici (mā'di-chē), a Florentine family who rose to wealth and influence by successful commerce, and who continued to combine the career of merchants and bankers with the exercise of political power, a princely display of private munificence, and a liberal patronage of literature and art. The Medici were associated with the history of the Florentine republic from an early period, but they first became prominent in the person of Salvestro, who became gonfalonier in 1378. GIOVANNI DE' MEDICI (1360-1429) amassed great riches by trade; rendered great services to the city, and in 1421 became gonfalonier. He was succeeded by his son COSMO (the elder, 1389-



Cosmo de' Medici.

1464), surnamed the *father of his country*. Cosmo acquired immense wealth and influence, and laid the foundation of his reputation by the munificent patronage of art and letters, and the conjunction of consummate statesmanship with his commercial enter-

• MEDICINE.

prise. He was for thirty-four years the sole arbitrator of the republic and the adviser of the sovereign houses of Italy. His grandson LORENZO THE MAGNIFICENT (1449–92) was the second great man of the house of Medici. He governed the state in conjunction with his brother GIULIANO (1453–78) till the latter was assassinated by the Pazzi, a rival Florentine family. Escaping from this massacre he sustained a war with Ferdinand of Naples, with whom he signed a definitive peace in 1480. The rest of Lorenzo's reign was passed in peace and in those acts of profuse liberality and magnificent patronage of arts and sciences, in which he rivalled or excelled his grandfather. He left three sons—PIERO (1471–1503), GIOVANNI (afterwards Pope Leo X.), and GIULIANO, duke of Nemours. Piero succeeded his father, but was deprived of his estates when the French invaded Italy in 1494. He finished his career in the service of France. His eldest son Lorenzo came to power by the abdication of his uncle Giuliano, who became Duke of Urbino. He died in 1519, leaving a daughter, the famous Catherine de Medici, queen of France. After several reverses in the family, Alessandro, an illegitimate son of the last named Lorenzo, was restored to Florence by the troops of Charles V., and by an imperial decree he was declared head of the republic, and afterwards Duke of Florence. The next name of importance in the family is that of Cosmo 'the great,' in 1537 proclaimed Duke of Florence and afterwards Grand-duke of Tuscany. A learned man himself, he was a great patron of learning and art, a collector of paintings and antiquities. He died in 1574. FRANCISCO MARIA, his son, obtained from the Emperor Maximilian II., whose daughter Joanna he had married, the confirmation of his title of grand-duke in 1575, which continued in his family until it became extinct in 1737 on the death of Giovanni Gasto, who was succeeded by Francis, duke of Lorraine. See *Tuscany*, *Catherine de Medici*, *Marie de Medici*.

Medicine, the science of diseases, and the art of preventing, healing, or alleviating them. It deals with the facts of disease, with the remedies appropriate to various diseases, with the results of accident or injury to the human body, with the causes that affect the origin and spread of diseases, and with the general laws that regulate the health of individuals and the health of communities. It is broadly divided into two

great sections, surgery (which see) and medicine proper; that is to say, the diseases affecting the outer frame visible to the eye are relegated to the care of the surgeon, while those that affect the internal organs belong to the province of the physician. A department related to both is obstetric medicine or midwifery, dealing with child-bearing and with the diseases peculiar to women. With this department is closely connected that which comprehends the diseases of children. There are also departments dealing with special organs, such as those relating to diseases of the eye, of the ear, of the throat, of the skin, &c., each of which occupies its own domain of knowledge, and is represented by highly-trained specialists. The treatment of the insane, as it is concerned with nervous diseases and correlated states of other organs, is an integral part of medical practice. War also has given rise to special developments of medical and surgical science, viz., military hygiene and military surgery; and the administration of the law has created a special branch—medical jurisprudence or forensic medicine.

At first all diseases, in common with other phenomena, were attributed to supernatural causes, and the direct doings of unseen beings; and had to be exorcised by ceremonies, prayers, and adjurations. In course of time it was recognized that diseases were natural phenomena, but at the same time each was held to be a principle or entity distinct from its effects, and each disease was supposed to have a specific remedy—something that would actually cure the disease. Such views led to the adoption of various systems of treatment. For instance, one school held that only vegetable remedies were appropriate to the treatment of diseases; another school upheld the hydropathic system, or the virtues of the bath in one or other of its forms as a universal panacea for all human ills. A third maintained the application of the homœopathic principle that similars are cured by similars, that is to say, diseases are cured by substances having, in small doses, an action on the body similar to that of the disease, so that one might treat diseases by a series of fixed and specific formulæ all depending on this single principle. Finally, even in orthodox medical circles there is a strong disposition to attribute success of treatment to particular drugs, and to simply act on a principle contrary to that of homœopathy, viz., that diseases are cured by contraries, that is, by remedies

having an action on the body the reverse of that of the disease. All these opinions depend on a mistaken view of disease. Anything that interferes with the free and healthy action of any part of the body produces a state of disease, and the symptoms of the disturbance manifest the disease. For instance, in the case of zymotic diseases, they are caused by the entrance into the body of living germs which grow and multiply in the blood and tissues, and interfere with the various organs. These germs are, however, not the disease, but the cause of the disease. Again many diseases are due not to something that has entered the body, but to a breaking down of a certain part of the system. It is clear, therefore, that no specific remedies can be applied to such diseases. The object of the physician is to restore as far as possible the conditions of healthy action: to remove if he can the causes of the disease, to relieve pain, and to control symptoms so as to direct them towards recovery.

The chief departments of medical science may be given as follows:—The science of health is called *hygiene*, or as far as it relates to the regulation of the diet, *dietetics*. *Pathology* is the science of disease, of that in which it consists, its origin, &c. *Nosology* treats of the various sorts of diseases, their origin and symptoms, and strives to arrange diseases according to a scientific classification. *Pathological anatomy* deals with the mechanical alterations and changes of structure. *Therapeutics* is the science of the cure of diseases, often divided into *general*, treating of the subject of cure in general, its character, &c.; and *special*, of the cures of the particular diseases. *Surgery* treats of external diseases and injuries, and the mode of relieving derangements by operative means. *Obstetrics* treats of the modes of facilitating delivery. *Materia medica* is the science of medicines, their external appearance, history, and effects on the human organization. *Pharmacy* teaches how to preserve drugs, &c., and to mix medicines. *Clinics* applies the results of all these sciences at the bedside of the patient. (See the various medical articles under separate heads.) Among names famous in the history of medicine, may be mentioned Hippocrates, the father of medicine; Celsus, Galen, Avicenna, Paracelsus, Vesalius, Van Helmont, Sylvius, Stahl, Harvey, Sydenham, Boerhaave, Hoffman, Cullen, Brown, Hahnemann, &c. There are many British statutes

having direct relation to medicine: they may be divided into four groups (1) those related to public health; 2) those relating to lunacy (and habitual drunkenness); (3) those relating to the status of the medical profession, to dentists, and to pharmaceutical chemists; (4) those relating to restrictions on the practice of anatomy and physiology. See also *Surgery*.

Medick (*Medicago*), a genus of plants, nat. order Leguminosæ, nearly allied to the clover. For purple medick or lucerne, see *Lucerne*. Black medick (*M. lupulina*), so called from the black colour of the ripe pods, is also known, from the colour of its flower, as *yellow lucerne*. There are about forty species, natives of Europe, Western Asia, and Northern Africa.

Medi'na (Arabic *Medinah-el-Nebi*, The Prophet's City), a city in Arabia, containing the tomb of Mohammed, about 250 miles north by west of Mecca, in the most fertile spot of all Hejaz. The Mosque of the Prophet, which is the only building of importance, contains the sacred tomb, inclosed with a screen of iron filagree. Though the pilgrimage to the tomb is not considered by Mohammedans as an imperative duty, like that to the Kaaba, yet it is estimated that one-third of the Mecca pilgrims go on to Medina. Unbelievers enter the city at peril of their lives, but it was visited by R. F. Burton in 1853. Pop. 16,000 to 20,000.

Medina-Sidonia, a town of Spain, in Andalusia, in the province of Cadiz, 23 miles E.S.E. of the town of Cadiz. Pop. 12,397.

Medi'net-el-Fayoum, a town of Egypt, capital of the Fayoum, about 25 miles west of the Nile, a place of active trade. Pop. 25,799.

Mediterranean Sea (Lat. *Mare Internum*), the great inland sea between Europe, Asia, and Africa, about 2200 miles long and 1200 in extreme breadth. It communicates on the west with the Atlantic Ocean by the Strait of Gibraltar, and on the north-east with the Black Sea through the Sea of Marmara and the Straits of the Dardanelles and Constantinople. It is very irregular in shape, and is divided, near its centre, into two distinct and not very unequal portions, an eastern and a western, the latter lying west of Italy, Sicily, and Cape Bon in Africa. The other important subdivisions are the Adriatic Sea or Gulf of Venice, and the Ægean Sea or Archipelago. The largest and most important islands are Sicily, Corsica, and the Balearic Isles, in the west division; and

Cyprus, Rhodes, Crete, the Ionian Isles, and Malta, in the east division. The principal rivers which discharge themselves directly into the Mediterranean are the Ebro, Rhône, Po, and Nile. The depth varies from 30 to 2150 fathoms. Owing to the very narrow channel which connects the Mediterranean with the main ocean, there is very little tide; though on parts of the African coast, &c., a rise of more than 6 feet sometimes occurs. The Mediterranean abounds with fish, and also furnishes the finest coral and sponges. It is a great highway of traffic.

Medjidie (med-jid'i-ā), a Turkish order of knighthood, instituted in 1852, and conferred on many British and other officers who took part with Turkey in the Crimean war.—The term is also applied to a Turkish golden coin worth from 17s. 9d. to 18s.

Medlar, a tree of the genus *Mespilus*, the *M. germanica*, found wild in several parts of Central Europe, and cultivated for its fruit, which is remarkable for its acerbity when first gathered. It loses this acerbity after a few weeks' keeping.

Médoc, a district of Western France, in the department of the Gironde. It is celebrated for its wines. See *Bordelais Wines*.

Medul'la, or **MARROW**, in animals, the highly vascular connective tissue, interspersed with adipose or fat-cells, which fills up the hollow shafts or *medullary canals* of long bones, and which forms a centre of nourishment for the inner osseous material of which the bone is composed. The *medulla oblongata* is the upper enlarged portion of the spinal cord, while the *medulla spinālis* is the continuation downwards of the brain matter. In vegetable physiology the *medulla* is otherwise known as the *pith*. See *Botany*.

Medu'sa. See *Gorgons*.

Medu'sidæ, the jelly-fishes or sea-nettles, a name given to coelenterate animals of the class Hydrozoa, being free and oceanic animals, the most typical of which consist of a single *nectocalyx* or swimming-bell, from the roof of which one or several polypites are suspended. The *nectocalyx* is furnished with a system of canals, and a number of tentacles depend from its margin. A number of the medusæ formerly believed to be distinct animals have been shown to be really the free, generative buds of other Hydrozoa.

Med'way, a river of England, which flows in a winding course across Kent, past Tun-

bridge and Maidstone, to Rochester and Chatham, where it spreads out into a broad estuary, joining that of the Thames. It is navigable to Maidstone; length 70 miles.

Meerane (mā'rā-ne), a town in the kingdom of Saxony, 12 miles N.N.E. of Zwickau, with manufactures of woollens, dye-works, &c. It has grown recently from an insignificant country town to a manufacturing centre. Pop. 22,293.

Meerschaum (mēr'shum), a hydrated silicate of magnesium, consisting of 60.9 parts silica, 26.1 magnesium, and 12.0 water, occurring as a fine white compact clay. It is found in Europe, but more abundantly in Asia Minor, and is manufactured into tobacco-pipes.

Meerut', or **MIRAT'**, a city, cantonment, and administrative centre of the North-west Provinces, India, situated between the Jumna and the Ganges, 36 miles north-east of Delhi. It is surrounded by a dilapidated wall inclosing narrow streets and wretchedly-built houses. The church is one of the largest in India, and there is also a Roman Catholic chapel, government schools, hospital, &c. Meerut was the scene of the first great outbreak among the Sepoys in 1857. Being at an altitude of 800 feet above the sea, it is an agreeable and salubrious residence. Pop. 99,565.—The district of the same name occupies an area of 2379 square miles, and is the most fertile territory in the region known as the Doāb. Pop. 1,313,137.

Megacēros. See *Elk (Irish)*.

Megæ'ra, one of the Furies (which see).

Megalichthys (-ik'this), a genus of fossil ganoid fishes of the carboniferous period, characterized by large smooth, but minutely punctured, enamelled scales, some of which have been found as large as 5 inches in diameter, indicating a fish of great size.

Megalo'nyx, a genus of fossil edentate mammals, allied to the sloth, but adapted for a terrestrial instead of an arboreal life, found in the upper tertiaries of America.

Megalosau'rus, a fossil reptile found in the Oolite and Wealden strata. Its length has been estimated at between 40 and 50 ft. Its powerful, pointed, and trenchant teeth indicate its carnivorous habits, and from its gigantic size and strength it must have been very destructive to other animals.

Megalo'tis, the generic name of the fenecs.

Megapo'dius, a genus of rasorial birds, type of the family Megapodidæ, the best known and most remarkable species of which

is the Australian jungle-fowl (*M. tumulus*), a large bird remarkable for erecting considerable mounds, composed of earth, grass, decayed leaves, &c., sometimes 15 feet high and 150 in circumference, and in the centre of which, at a depth of 2 or 3 feet, it deposits its eggs, leaving them to be hatched by the heat of the fermenting vegetable mass. The leipoa and tallegalla are akin.

Megap'tera, a genus of whales of the family Balænidæ, including the hump-backed whales.

Meg'ara. See *Megarís*.

Meg'aris, a small district or state of ancient Greece, partly in Northern Greece, partly on the Corinthian isthmus. The only important town was Megara, situated a mile from the sea. Megaris had flourishing colonies at an early period, but afterwards became annexed to Attica.

Megathe'rium, a fossil genus of edentate mammals, allied to the sloths, but having feet adapted for walking on the ground,



Megatherium restored.

found in the upper Tertiary or pampas deposits of South America. It was about 8 feet high, and its body 12 to 18 feet long. Its teeth prove that it lived on vegetables, and its fore-feet, about a yard in length and armed with gigantic claws, show that roots were its chief objects of search.

Meghná, a river or estuary of Bengal, which carries the waters of the Ganges and the Brahmaputra to the sea. Its most noteworthy characteristic is the 'bore' or tidal wave which advances swiftly at the height of 20 feet.

Mehem'et Ali, Viceroy of Egypt, born at Kavala, in Macedonia, in 1769, died 1849. He entered the Turkish army, and served in Egypt against the French; rose rapidly in military and political importance;

became pasha of Cairo, Alexandria, and subsequently of all Egypt. In 1811 he massacred the Mamelukes to the number of 470 in Cairo, and about 1200 over the country. He then commenced, by the orders of the Porte, a war of six years' duration against the Wahabees of Arabia, which was brought to a successful conclusion by his son Ibrahim, and secured him the possession of Hejaz. Ibrahim also aided in bringing a large part of the Soudan under Egyptian rule. By means of a vigorous domestic policy Mehemet reduced the finances to order; organized an army and a navy; stimulated agriculture, and encouraged manufactures. In 1824-27 he assisted the sultan in endeavouring to reduce the Morea, which led to the destruction of his fleet by the allied European powers at Navarino (1827). Subsequently he turned his arms against the sultan, and in his efforts to secure dominion over Syria by armed invasion, he was so far successful (see *Ibrahim Pasha*) that the European powers had to interfere and compel him to sign a treaty in 1839, which gave him the hereditary pashalic of Egypt in lieu of Syria, Candia, and Hejaz. In his latter days he sank into dotage.

Méhul (mā-ül), ÉTIENNE HENRI, musical composer, born at Givet in 1763, died 1817. He studied under Gluck; made his début as a composer at the Paris Opéra Comique with his opera *Euphrosine* and *Corradin* (1790), and followed up his success with *Irato*, *Joseph*, and other operas to the number of forty-two. Méhul gained considerable fame by his musical setting of Chenier's patriotic songs, *le Chant du Départ*, &c., and other pieces popular during the revolution.

Meiningen (mī'ning-en), a town in Germany, capital of the duchy of Sachsen-Meiningen, in a narrow and picturesque valley, on the Werra, 40 miles s.s.e. of Erfurt. The castle of the duke contains a picture gallery, cabinet of coins, public and private library, &c. The theatre has attained some fame for its excellent companies. Pop. 11,440.

Meissen (mī'sen), an ancient town of Saxony, founded by Henry I. in 922-933, 14 miles w.n.w. of Dresden, at the influx of the Triebisch into the Elbe. On a height above the town stand a noble Gothic cathedral, founded in the 13th century, and an extensive castle in the late Gothic style, belonging to the 15th century, recently restored and decorated with frescoes. Porcelain (in the

royal porcelain factory near the town) is the staple manufacture. Meissen is the see of an archbishop. Pop. 15,470.

Meissonier (mā-son-yā), JEAN LOUIS ERNEST, French painter, born in Lyons 1815; went to Paris in 1830; first picture exhibited, *The Visitors*, 1834. He first became known as an illustrator of books, but



J. L. E. Meissonier.

rapidly became famous for the singular perfection of his art. His pictures, which, whether in genre or in portraiture, are almost without exception upon a small scale, are characterized by great minuteness of execution and high finish, but are at the same time not less remarkable for their excellence in composition and breadth of treatment. They have the force of appeal of large works. The greater number of them are groups of figures (chiefly of the 17th and 18th centuries) in conversation, single quiescent figures, and battle scenes or military subjects. Great accuracy of draughtsmanship, keen observation, and the sharp accentuation of the important note in the picture distinguish all his works. Amongst his pictures, which possess an astonishing market value, may be mentioned, *The Smoker*, 1839; *La Partie des Boules* (1848); *Napoleon III. at Solferino* (1864); the *Cavalry Charge* (1867), sold for 150,000 francs; the picture entitled '1807' (1875), one of his largest works, representing Napoleon I. in the battle of Friedland, sold for 300,000 francs; *Jena* (1889). He died in 1891.

Mekong, MEKHONG, or CAMBODIA, the longest of all the Indo-Chinese rivers, rises in East Tibet, flows through part of China, Siam, Cambodia, and French Cochin-China, and enters the Chinese Sea by several mouths; length estimated at 2700 miles. It is of

comparatively little use for inland navigation, but steamers have ascended it to lat. 14° N.

Mekran', a maritime district of Southern Asia, forming part of Persia and of Beluchistan. It is mostly arid and barren, but there are fertile tracts along the river valleys yielding excellent dates.

Mela, POMONIUS, a Roman geographer who flourished during the 1st century after Christ, and is the author of a treatise, *De Situ Orbis*, containing a concise view of the state of the world as known to the Romans.

Melaleuca. See *Cajeput*.

Melancholia, MELANCHOLY. See *Insanity*.

Melanchthon (me-langh'thon; Ger. melangh'ton), PHILIP, German reformer, born at Bretten, in the Palatinate, 1497; died at Wittenberg, 1560. His father was an armourer, and his original German name was Schwarzerd, which he Grecized into Melanchthon, or Melanthon. Both names denote 'black earth.' After having studied at Pforzheim he removed to Heidelberg University, where he took his Bachelor's degree, and afterwards to Tübingen University, where he attained the degree of Master, and became a lecturer. In 1518, at the instigation of Luther and Reuchlin, he was invited by Frederick, elector of Saxony, to fill the chair of Greek in the recently founded University of Wittenberg. In 1519 he accompanied Luther to Leipzig, in order to dispute with Dr. Eck, and in 1521 he published his famous *Loci Communes*, an exposition of Protestant dogmatics, which ran through some sixty editions in his lifetime, and was followed by other influential writings, such as the *Epitome Doctrinæ Christianæ* (1524). There is no doubt that many of the plans carried out by the reformers were the result of Melanchthon's wise suggestions. His Greek scholarship was also of inestimable advantage to Luther in his work of translating the Bible. In 1530 Melanchthon was appointed to draw up the general Confession which was presented to the emperor at Augsburg (hence known as the Augsburg Confession, which see), and he also wrote the Apology for it. Before Luther's death, in 1546, a certain difference of view developed itself between the two reformers, and after that event Melanchthon lost in some measure the confidence of a section of the Protestants, and was involved in painful controversies, being accused by one party of a too great leaning to Calvinism, by another of a similar leaning to Romanism.

MELANESIA — MELBOURNE.

Melane'sia, a group of islands stretching from the north-east of New Guinea to the tropic of Capricorn, and including New Britain Archipelago (with the Admiralty Islands), Solomon Islands, Queen Charlotte or Santa Cruz Islands, New Hebrides, New Caledonia, Loyalty Islands, and the Fiji Islands.

Mel'anite, a lime-iron variety of garnet, of a velvet black or grayish black, occurring always in crystals of a dodecahedral form. See *Garnet*.

Melanorrhœa (mel-an-o-rē'a), a genus of very large Indian trees, belonging to the nat. order Anacardiaceæ. It includes *M. usitatissima*, or black varnish tree—which yields when tapped a varnish much valued for lacquering.

Melantha'ceæ, a nat. order of poisonous endogens, consisting of bulbous, tuberous, and fibrous rooted plants, with or without stems, and having parallel-veined leaves. There are about 130 species, natives of all parts of the world, some of which resemble crocuses and some small lilies. The most important species are medical plants, as colchicum, white hellebore.

Mel'aphyre, a compact black or blackish-gray igneous rock, consisting of a matrix of labradorite and augite, in which are embedded crystals of the same minerals, and sometimes uniaxial mica, hornblende, and iron pyrites. It is essentially a basalt.

Melas'toma, a genus of plants of the nat. order Melastomaceæ (which see).

Melastoma'ceæ, an extensive nat. order of polypetalous exogens, nearly related to Myrtaceæ. They are shrubs or trees, rarely herbs, with opposite or whorled leaves, often prominently three or five nerved, and often handsome flowers. The species, of which about 1200 are known, abound chiefly in tropical countries, especially in South and West Africa.

Melbourne, a city of Australia, capital of the colony of Victoria, on the Yarra-Yarra, about $2\frac{1}{2}$ miles ($6\frac{3}{4}$ miles by water) from Port Phillip Bay, upon which are the ports of Sandridge, or Port Melbourne and Williamstown, possessing large and commodious piers; while Hobson's Bay (the northern extension of Port Phillip Bay) and Port Phillip Bay itself afford unlimited anchorage for

the largest vessels. Melbourne was founded in 1836 during the premiership of Lord Melbourne, after whom it was named. It was incorporated in August, 1842, and in 1849 erected into an episcopal see. The city and its suburbs occupy an extensive area, which is mostly hilly or undulating, with the Yarra winding through it, the city proper, on the north bank of the Yarra, being the central and most important business part of the whole. Here the principal streets are about a mile long and 99 feet wide, and run at right angles to one another, being lined with handsome and substantial edifices. Beyond the city proper are the far more extensive suburbs, such as Collingwood, North Melbourne, Fitzroy, Carlton,



Brunswick, Prahran, Richmond, Hawthorn, St. Kilda, Kew, South Yarra, &c. The public buildings of Melbourne as a whole are handsome and substantial, and quite on a par with those of cities of like size in Europe. Among them the most remarkable are the houses of parliament, the treasury, the law-courts, the free library, containing over 110,000 volumes; the mint, a very handsome quadrangle; the university, with an admirable museum attached; the Ormond Presbyterian college; the town-hall, capable of seating 4000 persons; the post-office; the exchange; the athenæum; the theatres; the Anglican and Roman Catholic cathedrals and numerous churches, &c. There are several public parks, a finely laid-out botanical garden, and a splendid race-course. There are cable tramways in some of the principal streets, and the system is

being extended. There is access to the centre of the city for vessels of considerable size by means of the river Yarra, the navigation of which has recently been much improved. The shipping trade is large, both in exports and imports, the chief of the former being wool, of the latter manufactured goods. Most imports are subject to a heavy duty. By its railway systems Melbourne is connected with all the principal towns of the Australian continent. The chief industrial products are leather, clothing, furniture, flour, ales, cigars, ironware, woollens, &c. A Centennial International Exhibition was held here in 1888 in celebration of the founding in 1788 of the Australian Colonies. While thoroughly representative of all the arts and industries of Victoria, New South Wales, South Australia, Queensland, Tasmania, and New Zealand, it brought together a splendid collection of exhibits from Europe, Asia, and America. The ground set apart for the Exhibition covered $43\frac{3}{4}$ acres, and the buildings $35\frac{1}{2}$ acres. Population of city proper, 71,550; inclusive of suburbs, 1891, 488,999.

Melbourne, WILLIAM LAMB, VISCOUNT, English statesman, born in 1779, died in 1848. Educated at Eton and Cambridge, he became a barrister, but relinquished the law and became member of parliament for Leominster. During the ministry of Canning he was secretary for Ireland; in 1830 he became home secretary in the Grey administration, and succeeded to the premiership when it was overthrown in 1834 on the Irish question. He continued to lead the Whig party with varying success until 1843, when he resigned and retired from public affairs. His political career is chiefly remarkable for the wise counsel and judgment with which he guided the young Queen Victoria on her accession in 1837.

Melchites (mel'kítz), an Eastern sect of Christians who, while adhering to the ceremonies and liturgy of the Greek Church, acknowledge the authority of the pope. The name is also given to such members of the Greek community as are the Roman Catholics.

Melchiz'edek, a personage mentioned in Gen. xiv. 18 as king of Salem and a priest of the most High God. Referred to again Ps. cx. 4, and Heb. v., vi., vii. As to his personality and character nothing is known.

Melea'ger, in Greek mythology, the son of Ceneus, king of Calydon. He distinguished himself in the Argonautic expedi-

tion and more particularly at the Calydonian hunt, killed the boar, and gave its skin as the highest token of regard to his beloved Atalanta.

Meleag'ris, the genus of birds to which the turkey belongs, type of the family Meleagridæ.

Melegnano (mel-e-nyä'nō). See *Marignano*.

Meles, the genus to which the badger belongs.

Melfi, a town of Southern Italy, province of Basilicata, or Potenza, on a lofty volcanic height, 75 miles E.N.E. of Naples, surrounded by dilapidated walls. Its chief trade is in an excellent wine. Pop. 11,640.

Me'lia, a small genus of trees, type of the nat. order Meliaceæ, natives of tropical Asia and Australia. *M. Azadirachta*, the neem-tree or margosa, is a native of the East Indies. Its bark yields a bitter used as a tonic, its seeds yield a valuable oil, and its trunk a tenacious gum. *M. Azadarach*, sometimes called *Persian lilac*, *pride of India*, and *bead-tree*, is a native of the north of India, now cultivated in the United States, as well as in southern Europe.

Melia'ceæ, a nat. order of polypetalous dicotyledons, distinguished by their stamens being united into a tube. See *Melia*.

Melikoff. See *Loris Melikoff*.

Mel'ilot (*Melilōtus*), a genus of leguminous plants, sub-order Papilionaceæ, differing from the clovers in having racemose flowers. The common yellow melilot (*M. officinālis*) grows wild in woods, hedges, and neglected fields in Britain and most parts of Europe. White melilot (*M. vulgāris* or *leucantha*), common in some parts of Europe, has become naturalized in Britain. It has been recommended as a fodder plant under the names of *Cabul* and *Bokhara clover*.

Melin'da, a seaport of Eastern Africa, on the Zanzibar coast, formerly a place of importance.

Mel'inite, an explosive prepared from picric acid and the solid residue from the evaporation of collodion.

Meliphag'idæ, the honey-eaters or honey-suckers, a family of birds which abound in all parts of Australia.

Melis'sa, **Melitta**, the genus of plants to which belongs *M. officinālis*, or common balm.

Mel'ita. See *Malta*.

Melkart, the national god of the ancient Phœnicians, a god of the sun.

Mellite, Mellilite, honey-stone, a mineral of a honey-yellow or brownish colour and resinous lustre.

Mello'ca, Mello'co, a genus of plants of the nat. order Basellaceæ. *M. tuberosa*, a species of the genus, is cultivated in Peru, Bolivia, and New Grenada, on account of its esculent tuberous roots.

Melocac'tus, a genus of plants, nat. order Cactaceæ, characterized by the flowers being produced in a hemispherical or cylindrical head at the top of the plant. The plants themselves consist of simple fleshy stems of a globular or conical form, with numerous prominent ribs armed with fascicles of stiff spines placed at regular distances.

Melodrama, originally and strictly, that species of drama in which the declamation of certain passages is interrupted by music, but now the term has come to designate a romantic play, generally of a serious character, in which effect is sought by startling incidents, striking situations, and exaggerated sentiment, aided often by splendid decoration and music.

Melody, in the most general sense of the word any successive connection or series of tones; in a narrower sense, a series of tones which please the ear by their succession and variety; and in a still narrower sense, the particular air or tune of a musical piece.

Mel'oe, a genus of beetles belonging to the family Cantharidæ; otherwise called oil-beetles.

Melon (*Cucūmis Melo*), a well known



Melon (*Cucūmis Melo*).

plant and fruit of the nat. order Cucurbitaceæ or gourds. It is an herbaceous, suc-

culent, climbing or trailing annual, cultivated for its fruit in hot eastern countries from time immemorial. There are many varieties, as the Canteloup, which is reckoned the best, Egyptian, Salonica, Persian, &c. In Britain the melon, to be raised to perfection, requires the aid of artificial heat and glass throughout every stage of its culture. The *water-melon* (*C. Citrullus*) is much cultivated in the warmer parts of the world on account of its refreshing juice, which, however, is less sweet than that of the common melon. The *musk-melon* is a variety of *Cucūmis Melo*.

Melos, now MILOS or MILO, an island belonging to Greece, in the Grecian Archipelago, in the south-east of the Gulf of Ægina, one of the Cyclades; area, 64 sq. miles. Population 3490. In 1820 a peasant discovered here the celebrated statue known as the Venus of Milo, now placed in the museum of the Louvre at Paris.

Melpomene (mel-pom'e-nē), the muse who presides over tragedy, daughter of Zens and Mnemosyne. She is generally represented as a young woman, with vine leaves surrounding her head, and holding in her hand a tragic mask.

Mel'rose, a town of Scotland, in the county of Roxburgh, 31 miles s.s.e. of Edinburgh. Its celebrated abbey was founded by King David in 1136; destroyed by Edward II. in 1322; rebuilt by Bruce in 1326, and partly demolished by the English in 1545. Pop. 1550.

Melrose, Middlesex co., Mass., manuf. boots and shoes. Pop. 1890, 8519.

Melting-point. See *Fusing-point*.

Melton-Mowbray, a town of England, county of and 14 miles north-east of the town of Leicester, on the Eye or Wreak. It has a considerable trade in pork pies and Stilton cheese. Pop. 1891, 6392.

Melun (mê-lûn), a town of France, capital of the department of Seine-et-Marne, 27 miles south-east of Paris. It is regularly built, and has handsome quays and fine promenades. Pop. 12,560.

Melville, ANDREW, a Scottish reformer, born near Montrose, 1545; died at Sedan, 1622. He was educated at St. Andrews; studied at the University of Paris, 1564-66; became a professor at Poitiers, and afterwards at Geneva; returned to Scotland in 1574, where he was appointed successively principal of Glasgow and of St. Andrews universities. In 1582 he presented a petition to King James against the undue interfer-

ence of the court in ecclesiastical affairs, for which he only escaped imprisonment by going into England. Returning in 1585 he resumed his duties at St. Andrews, and became moderator of the General Assembly in 1587, 1589, 1594. In 1606 he was summoned to London by the king to confer on church matters, but because of his outspokenness he was committed to the Tower, and there remained until 1611. He then retired to France, and became professor in the University of Sedan.

Melville, Viscount. See *Dundas*.

Melville Island.—1. An island in the Polar Sea, north of America. Captain Parry discovered it, and passed the winter of 1819-20 there.—2. An island off the north coast of Australia; area, about 1800 square miles.

Membrane, in anatomy, a texture of the animal body, arranged in the form of laminæ, which covers organs, lines the interior of cavities, or takes part in the formation of the walls of canals or tubes. Membrane is generally divided into three kinds, mucous, serous, and fibrous. The lining of the nose, trachea, œsophagus, stomach, intestines, is of the first kind; the serous membranes form the lining of the sacs or closed cavities, as of the chest, abdomen, &c.; the fibrous membranes are tough, inelastic, and tendinous, such as the dura mater, the pericardium, the capsules of joints.

Memel, a Baltic seaport in Prussia, at the north end of and near the entrance to the Kurisches Haff, 75 miles north-east of Königsberg. It has various manufacturing and other industries, but the great source of its prosperity is its trade, which is very extensive, and consists chiefly of timber, corn, flax, hemp, potash, linseed, and colonial produce. Pop. 18,748.

Memling, or MEMLINC, HANS, a distinguished Flemish painter, born probably about 1430, died probably in 1495. He lived at Bruges, of which town he was a prosperous citizen, but little is known of his life. He was especially famous as a religious painter, and his works display a singular tenderness, ideality, and elevation. They are generally extremely well preserved.

Memmingen, a town of Bavaria, on the Aach, 41 miles south-west of Augsburg. Pop. 8688.

Memnon, a mythological personage mentioned in the Homeric poems as the beautiful son of Eös (the morning), and in the post-Homeric accounts as the son of Tithō-

nus and nephew of Priam, whom he assisted at the siege of Troy. He slew Antilochus, but was himself slain by Achilles. His mother was filled with grief at his death, which Zeus endeavoured to soothe by making her son immortal. The name of Memnon was latterly connected with Egypt, and was attached to a statue still standing at Thebes, being one of two known from their size as 'the Colossi.' This statue, known as 'the vocal Memnon,' was celebrated in antiquity as emitting a sound every morning at the rising of the sun—perhaps through the craft of the priests, though some think it was owing to expansion caused by heat. Both statues seem originally to have been about 70 feet high.

Memory, the power or the capacity of having what was once present to the senses or the understanding suggested again to the mind, accompanied by a distinct consciousness that it has formerly been present to it; or the faculty of the mind by which it retains the knowledge of past events, or ideas which are past. The word *memory* is not employed uniformly in the same precise sense, but it always expresses some modification of that faculty which enables us to treasure up and preserve for future use the knowledge which we acquire; a faculty which is obviously the great foundation of all intellectual improvement. The word *memory* is sometimes used to express a capacity of retaining knowledge, and sometimes a power of recalling it to our thoughts when we have occasion to apply it to use, the latter being more correctly called *recollection*. See *Mnemonics*.

Memphis, an ancient city of Egypt, on the left bank of the Nile, some 20 miles south of Cairo, said to have been founded by Menes, the first king of Egypt. It was a large, rich, splendid city, and after the fall of Thebes, the capital of Egypt. At the time of the conquest of Egypt by Cambyses (524 B.C.) it was the chief commercial centre of the country, and was connected by canals with the Lakes of Mœris and Mareotis. With the rise of Alexandria the importance of Memphis declined, and it was finally destroyed by the Arabs in the 7th century. The pyramids of Sakkara and the colossal statue of Rameses II., now mutilated and thrown down, are the chief objects of antiquarian interest on the site.

Memphis, a town and port of the United States, in Tennessee, on the Mississippi, just below the junction of Wolf River, 190

miles w.s.w. of Nashville. It stands upon a bluff about 30 feet above the river in its highest floods, and is fronted by a fine esplanade. Its rapid growth is due to its favourable position for trade, which is largely carried on by rail and river, chiefly in cotton. Pop. 1890, 64,495.

Mena'do, the capital of a Dutch residency of same name in the north-east peninsula of Celebes. The town itself has a population of about 6000, while the inhabitants of the whole territory number about 500,000.

Ménage (mā-nāzh), **GILLES**, a French man of letters, born 1613 at Angers, died 1692. After finishing his early studies he was admitted an advocate, but, disgusted with that profession, he entered the church, and through the favour of Cardinal de Retz and Mazarin obtained several benefices. From this time he dedicated himself solely to literary pursuits. His principal works are *Dictionnaire Étymologique, ou Origines de la Langue Française*; *Origines de la Langue Italienne*; *Miscellanea*, a collection of pieces in prose and verse.

Menai Strait (men'ā), a strait about $\frac{1}{2}$ mile across, between the island of Anglesea and the coast of Wales. For the bridges over it see *Bridge*.

Menam', the chief river of Siam, rising in the Laos country, and flowing generally southward to enter the Gulf of Siam below Bangkok; length, about 900 miles.

Menan'der, a Greek writer of the new comedy, born at Athens 324 B.C., died B.C. 291. He was the pupil of Theophrastus, an intimate friend of Epicurus, and wrote comedies to the number of 100, of which we have only a few fragments remaining. The comedies of Terence were imitated or adapted from Menander.

Mencius, the Latinized name of Meng-tse, a Chinese teacher, who was born about 370 B.C., and died about 288 B.C. He was educated by his mother with such success that the approbation contained in the phrase 'the mother of Meng' has become proverbial. Mencius was one of the greatest of the early Confucians.

Men'daites. See *Christians of St. John*.

Mendelssohn (men'delz-zōn), **MOSES**, German philosopher, born of Jewish parents in 1729, died in 1786. He studied hard under adverse circumstances to acquire a knowledge of Jewish and modern literature; became bookkeeper to a Jewish silk manufacturer and tutor to his family. In 1754 he formed a friendship with Lessing, who

made him the hero of his *Nathan the Wise*, while he in turn defended his friend from the attacks of Jacobi, who accused Lessing of being a Spinozist. The chief works of Mendelssohn are a treatise on Metaphysics; *Phædon*, a dialogue on immortality (1767); *Jerusalem* (1783); and *Morgenstunden* (1785).

Mendelssohn-Bartholdy, **FELIX**, distinguished composer, born at Hamburg 1809, died at Leipzig 1847. He was the son of a wealthy Jew, who, recognizing his son's talent for music, had him carefully trained. In his ninth year he publicly appeared in Berlin as a musician, and in his sixteenth year he produced the well-known overture to the *Midsummer Night's Dream*. In 1829 he began an extensive tour through England, Scotland, France, Italy, and on his return to Germany he became musical director in Düsseldorf. Here he tried to establish a theatre but without success; and when he left that city in 1835 he became conductor of the famous concerts in the Gewandhaus of Leipzig—a position which he maintained with several slight interruptions until his death. In 1841 he was appointed musical director to the King of Saxony; was afterwards summoned to Berlin by the King of Prussia to become director of music at the Academy of Arts; and journeyed repeatedly to England, where he conducted his own music at London and Birmingham. Of his musical compositions the best known are the oratorios *Elijah* and *St. Paul*; the overture to *Ruy Blas*; and his *Songs without Words*. He left unfinished the oratorio of *Christus* and the opera of *Lorlei*.

Mendicant Orders. See *Orders (Religious)*.

Mendip Hills, a range of hills in England, in Somersetshire, attaining an altitude of 1067 feet.

Mendo'za, **DON DIEGO HURTADO DE**, a Spanish author, general, and politician, born 1503, died 1575. He wrote an account of the Moorish insurrection in the Alpujarras Mountains, but is best known by his comic romance, the *Life of Lazarillo de Tormes*, the first of a class of novels descriptive of the life of clever rogues.

Mendoza, a province of the Argentine Republic, on the eastern side of the Andes, area, about 54,000 sq. miles. The country is volcanic, the soil fertile but requiring irrigation; chief products: corn, wine, and fruits. Pop. 160,000.—The capital, which

has the same name, is situated about 2891 feet above the sea at the foot of the Cordilleras. It was almost totally destroyed by an earthquake in 1861, over 13,000 lives being lost, but has been rebuilt, and has now about 20,000 inhabitants.

Menela'us, in Greek mythology, son of Atreus, brother of Agamemnon, and husband of the beautiful Helen, with whom he received the kingdom of Sparta or Lacedæmon. His wife having been abducted by Paris, son of Priam, king of Troy, he summoned the Greek princes to avenge the affront, and himself led sixty ships to the siege of Troy. After its conquest he returned with Helen to his native land in a devious voyage which led him to Cypria, Phœnicia, Egypt, and Libya during a period of eight years.

Menes, or **MENA**, according to Egyptian traditions, the first king of Egypt. See *Egypt*.

Mengs, **ANTON RAFAEL**, historical painter, born 1728, died 1779. He was the son of a Danish artist settled in Dresden, by whom he was trained in art, and taken to Rome, where he studied the works of Michael Angelo and Raphael. On his return to Dresden the king appointed him principal court-painter. He painted also at Rome, and at the court of Charles III. of Spain. In 1773 he executed at Rome the Apotheosis of Trajan in fresco, his finest work.

Meng-tse. See *Mencius*.

Menha'den, an American salt-water fish (*Alōsa menhāden*). It belongs to the family Clupeidæ, or herrings, and abounds on the shores of New England. It yields quantities of oil, the refuse being used as manure. It is also preserved in the same way as the sardine.

Menin (mè-nan), a town of Belgium, prov. W. Flanders, on the Lys, with manufactures of lace, cotton, &c. Pop. 12,513.

Meninges (me-nin'jēz), the three membranes that envelop the brain, which are called the *dura mater*, *pia mater*, and *arachnoid membrane*. See *Brain*.

Meningitis (-jī'tis), the term applied to inflammation of the two inner membranes (*meninges*) which envelop the brain—the *arachnoid membrane* and the *pia mater*. There are two forms of this disease called *simple* and *tubercular*. The former may be caused by injuries of the head, exposure to cold or heat, disease of the ear, &c., and the symptoms are, pain in the head, giddiness, feverishness, and often vomiting; while the latter is frequently due to a scrofulous taint,

and is also called *acute hydrocephalus* or water in the head.

Menis'cus. See *Lens*.

Menisperma'ceæ, an extensive nat. order of exogenous plants, consisting of twining, often scrambling and slender, shrubby plants, with alternate leaves without stipules, and small greenish or white unisexual flowers. They are common in the tropical parts of Asia and America, and are usually bitter and tonic plants, the seeds of some of them having narcotic properties. One species yields *cocculus indicus*.

Menno, **SIMONS**, the founder of the sect known as the Mennonites, was born in Friesland 1496, died 1561. He was educated for the church, and became a Roman Catholic priest; but about 1530 he joined the Anabaptists. After the suppression of the disturbances at Münster Menno collected the scattered remnants of the sect, inculcated on them more moderate views, and for many years in Holland and the north of Germany, as far as Livonia, laboured to increase the number of his followers, and to disseminate his doctrines. There are a number of congregations in Holland, Germany, and Russia. These do not believe in original sin, and object to taking oaths, making war, or going to law. The Mennonites in the United States number about 200,000.

Menobran'chus, a genus of tailed amphibians, allied in structure to the eft or newt, found in lakes and streams of N. America.

Menominee, Menominee co., Mich., an important shipping point for lumber to Chicago. Pop. 1890, 10,630.

Menomonie, Dunn co., Wis., a depot for the fur trade. Pop. 1890, 5491.

Men'opome, **MENOPO'MA**, a tailed amphibian (*Menopōma alleganiense*) peculiar to the fresh waters of North America, which seems to form a connecting link between the perennibranchiate amphibians and the salamander.

Menschikoff, **ALEXANDER DANILOVITCH**, Russian minister, born at Moscow in 1672, died 1729. He was born in humble life, but ultimately became a prince of the empire and first favourite with Peter the Great. When that monarch died his power under Catherine I. was greatly increased. After two years she was succeeded by her grandson, Peter II., who came under the guardianship of Menschikoff, and to whom he endeavoured to marry his daughter. His designs, however, were frustrated by the combined efforts of the Dolgorukis and the young

czar, and Menschikoff was exiled to Siberia, where he died.—ALEXANDER SERGEIEVICH MENSCHIKOFF, great-grandson of the above, born 1787, died 1869, was both a general and a diplomatist, and in 1854 was made commander-in-chief during the Crimean war. He suffered defeat at the Alma and Inkerman; defended Sebastopol, but after its fall and the death of Nicholas he was recalled from the army, and died in retirement.

Menstruation, or MENSES, the periodical discharge of blood from the generative organs of the human female. The period at which menstruation begins is usually between the 14th and 16th year; it recurs at monthly intervals, lasting for four to six days, and thus continues until from the 45th to the 50th year; the discharge at each period is from 6 to 8 oz. All these conditions, however, vary with each individual. A discontinuance of this discharge is one of the first signs of conception, and the cessation usually continues during the period of pregnancy and lactation.

Mensuration is the practical application of the simpler processes of mathematics to the measurement of the area of a plane figure, or the volume of a solid, the result being expressed in square or cubic inches, feet, yards, &c. The area of any plane rectilineal figure is easily found, since it can always be divided into a certain number of triangles, and the area of every triangle is equal to the base multiplied by half the perpendicular height. If the figure is a parallelogram its area is equal to any side multiplied by the perpendicular distance from this side to the opposite; if a trapezium it is equal to half the sum of two opposite sides multiplied by the perpendicular distance between them. Circumference of a circle = diameter multiplied by 3.14159. Area of a circle = square of radius multiplied by 3.14159 = radius multiplied by half circumference. Volume of any rectangular solid = length, breadth, and depth multiplied together.

Mental Derangement. See *Insanity*.

Mental Philosophy. See *Mind*, *Metaphysics*, *Psychology*.

Menta'na, village in Italy, prov. of Rome, near Tivoli, where Garibaldi met with a defeat in 1867.

Mentha, the mint genus of plants. See *Mint*.

Menthol, a white crystalline substance obtained from oil of peppermint, of which

it smells strongly, used externally in cases of nervous headache.

Mento'ne, in French MENTON (mān-ton), a town in the French department Alpes-Maritimes, situated on the Mediterranean, divided into the old part perched upon a steep hill, and the new quarter along the shore. The climate is mild and equable; and the town has become a favourite winter health resort. Pop. 8433.

Mentor, the faithful friend of Ulysses, who intrusted to him the care of his domestic affairs during his absence in the war against Troy. The education of the young Telemachus fell to his charge, and the wise and prudent counsel which he gave the youth has given to his name its metaphorical significance.

Mentz. See *Mainz*.

Menu. See *Manu*.

Menu'ra, a genus of insessorial birds inhabiting Australia, of which the only species known is the lyre-bird (*M. superba* or *paradisica*). See *Lyre-bird*.

Menza'leh, a lake or lagoon in Egypt, running parallel with the Mediterranean, from which it is divided by a low-lying slip of land, from 2 to 12 miles in breadth. It receives the Pelusiac and Tanitic branches of the Nile, and communicates with the sea by three openings. The Suez Canal runs along its eastern extremity.

Mephistoph'eles, older forms MEPHISTOPHILUS, MEPHISTOPHILIS, the name of a demon in the old puppet-plays, adopted and developed by Marlowe in his tragical history of Dr. Faustus; and more especially by Goethe in the first part of Faust, where he becomes the cultured personification of evil rather than the Satan of popular belief.

Meppel, a town of Holland, province of Drenthe, with manufactures of linen and cotton fabrics, &c. Pop. 8418.

Mequinez (mek'i-nez), a city of Morocco, 35 miles west of Fez. It is surrounded by a dilapidated wall, and contains a handsome palace, a summer residence of the emperors of Morocco. Pop. about 30,000.

Meran (me-rän'), a town of Austria in the Tyrol, on the Passer near its junction with the Adige, a favourite winter health resort. Pop. 10,000.

Mercantile Law. See *Commercial Law*.

Merca'tor, GERARD, geographer, born at Rupelmonde, in Flanders, 1512; died 1594. He studied at Louvain; became a lecturer on geography and astronomy; entered into the service of Charles V., for whom he made

MERCATOR'S PROJECTION — MERCURY.

a celestial and a terrestrial globe; and in 1559 he retired to Duisburg as cosmographer to the Duke of Juliers. He is the author of a method of projection called by his name (see next article), the principles of which were applied practically by Edward Wright in 1599. He is also the author of *Tabulæ Geographicæ* (Cologne, 1578).

Mercator's Projection, a method of projection used in map-making in which the meridians and parallels of latitude cut each other at right angles, and are both represented by straight lines. By means of this projection seamen are enabled to steer by compass in straight lines, and not in the spiral necessitated by the other projections (see map). It is constructed as follows:—A line of any length is drawn to represent the equator. This line is divided into 36 or 18 equal parts for meridians at 10° or 20° apart, and the meridians are then drawn through these perpendicular to the equator. From a table of meridional parts take the distances of the parallels and of the tropics and arctic circles from the equator, marking them off above and below it. Join these points, and the projection is complete.

Merchandise Marks Act, passed in 1887, provides that all goods of foreign manufacture bearing any name or trade mark of any manufacturer, dealer, or trader in the United Kingdom (unless such goods are accompanied by a definite declaration of the country in which they were produced), are prohibited under penalties from being imported into the United Kingdom. The act also provides that any person who falsely represents that he is the maker of goods for the queen, the royal family, or a government department is liable in a penalty of £20.

Merchant Taylors' School, a secondary school or college in London, one of the great public schools, founded in 1561. It is divided into an upper and a lower school, the former into a classical and a modern side. There are a number of scholarships or exhibitions tenable at Oxford and Cambridge.

Mercia, the largest of the Anglo-Saxon kingdoms, comprehended all the middle counties of England, and was founded by Crida in 585. In 827 it was conquered by Egbert, who united the different kingdoms of England into one. After this time it was repeatedly overrun by the Danes. See *England*.

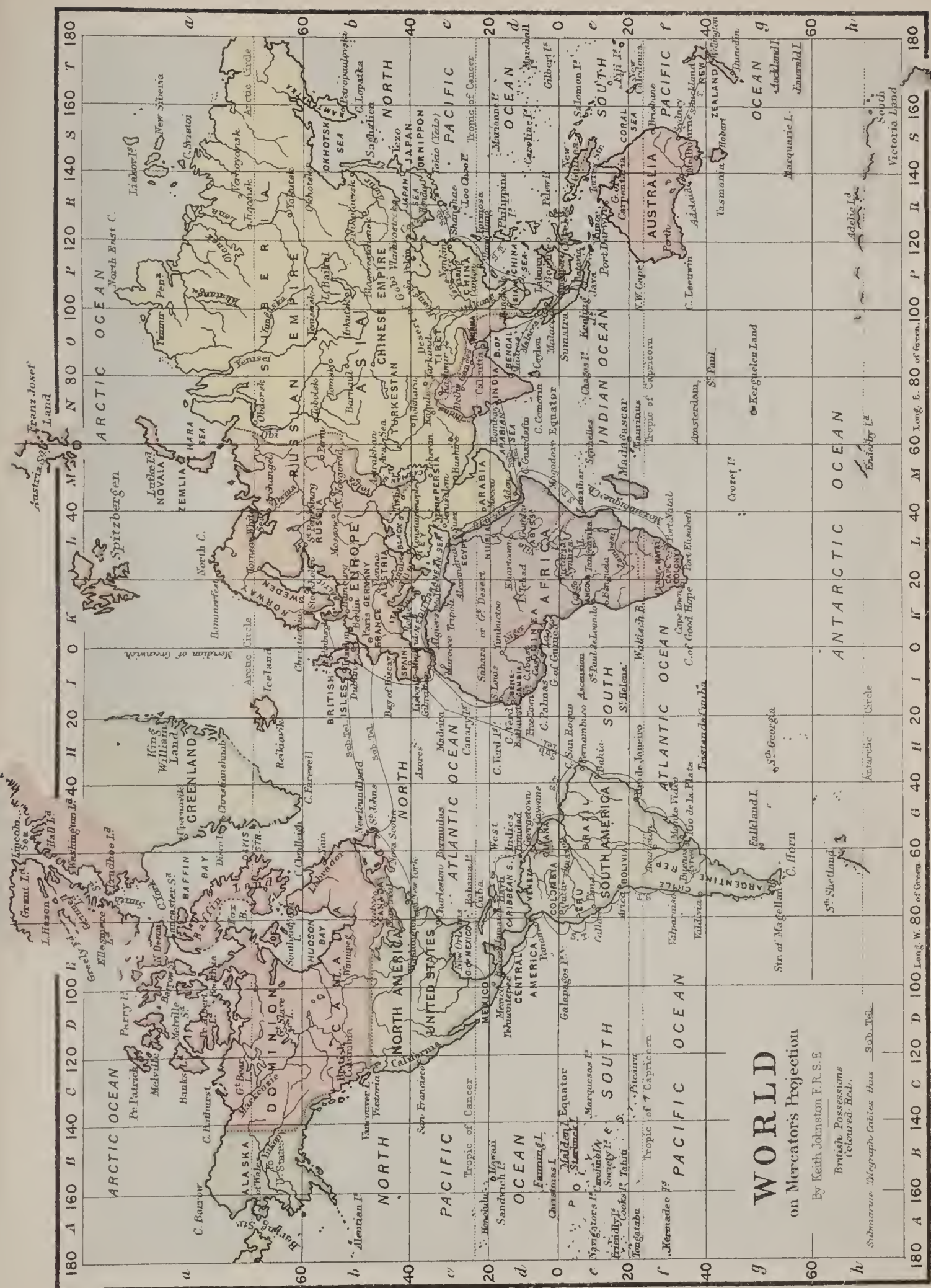
Mercier, HONORÉ, Canadian politician, born 1840. He studied law, and has been engaged in journalism. He sat in the Do-

minion parliament from 1872 till 1874, and became solicitor-general in the legislative assembly of Quebec in 1879, and attorney-general in 1887.

Mercury, in mythology, the name of a Roman divinity, identified in later times with the Greek *Hermēs*. As representing *Hermēs* he was regarded as the son of Jupiter and Maia, and was looked upon as the god of eloquence, of commerce, and of robbers. He was also the messenger, herald, and ambassador of Jupiter. As a Roman divinity he was merely the patron of commerce and gain. See *Hermēs*.

Mercury, in astronomy, the planet nearest the sun. He moves round the sun in 87·9693 of our mean solar days, at a mean distance of 35,392,000 miles; his eccentricity of orbit is 0·205618; the inclination of his orbit to the ecliptic is $70^\circ 0' 8''\cdot 2$, his diameter about 3050 miles. The period of his axial rotation is said to be 24 hours 5 minutes 28 seconds. His volume is about $\frac{1}{17}$ that of the earth; his density $\frac{1}{10}$ greater than the earth's. He is visible to the naked eye in spring and autumn after sunset and before sunrise. Transits of mercury over the sun's disc take place at intervals of 13, 7, 10, 3, 10, 3, &c., years.

Mercury, called also quicksilver, a metal whose specific gravity is greater than that of any other metal, except the platinum metals, gold, and tungsten, being 13·56, or thirteen times and a half heavier than water. It is the only metal which is liquid at common temperatures. It freezes at a temperature of 39° or 40° below the zero of Fahrenheit, that is, at a temperature of 71° or 72° below the freezing-point of water. Under a heat of 660° it rises in fumes, and is gradually converted into a red oxide. Mercury is used in barometers to ascertain the weight of the atmosphere, and in thermometers to determine the temperature of the air, for which purpose it is well adapted by its expansibility, and the extensive range between its freezing and boiling points. Preparations of this metal are among the most powerful poisons, and are extensively used as medicines. The preparation called calomel or mercurous chloride (HgCl) is a most efficacious deobstruent. Another valuable preparation is corrosive sublimate or mercuric chloride (HgCl_2). From the fluid state in which mercury exists it readily combines with most of the metals, to which, if in sufficient quantity, it imparts a degree of fusibility or softness. An alloy of mercury and



WORLD

on Mercator's Projection

By Keith Johnston F.R.S.E

British Possessions
(coloured Red).

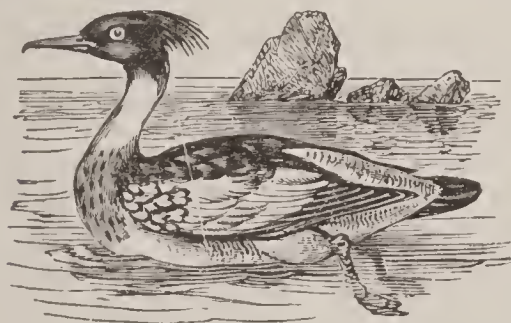
Submarine Telegraph Cables thus Sub. Tel.

any other metal is termed an *amalgam*. Mercury is chiefly found in the state of sulphide, but it is also found native. The chief mines of mercury are in Spain, but it is also found in Germany, Italy, China, California, Borneo, Mexico, and Peru.

Mercy, SISTERS OF, the name given to members of female religious communities founded for the purpose of nursing the sick at their own homes, visiting prisoners, attending lying-in hospitals, superintending the education of females, and the performance of similar works of charity and mercy. Communities of Sisters of Mercy are now widely distributed over Europe and America, some of them being connected with the Church of England.

Meredith, GEORGE, poet and novelist, born 1828 in Hampshire; educated in Germany; studied for the law, but essayed a literary career with a volume of poems in 1851. This was followed by the *Shaving of Shagpat* (1855); *Farina, a Legend of Cologne* (1857); *The Ordeal of Richard Feverel* (1859); *Evan Harrington* (1861); *Modern Love: Poems and Ballads* (1862); *Emilia in England* (1864); *Rhoda Fleming* (1865); *Vittoria* (1866); *The Adventures of Harry Richmond* (1871); *The Egoist* (1879); *The Tragic Comedians* (1881); *Poems and Lyrics of the Joy of Earth* (1883); *Diana of the Crossways* (1885); *Ballads and Poems of Tragic Life* (1887); &c.

Merganser, a genus of aquatic birds belonging to the duck family. The goosander



Red-breasted Merganser (*Mergus serrator*).

(*Mergus Merganser*) forms the typical British species; and the hooded merganser of North America (*M. cucullatus*) is occasionally found in Britain. They inhabit lakes and the sea-coast, migrate southward in winter, lay from eight to fourteen eggs, and are gregarious in habit.

Mergui, the principal town of the district of same name in British Burmah, on an island in the delta of the Tenasserim river, close to where it falls into the Bay of

Bengal. The harbour is good, and the modern town occupies a low range of hills rising from the river. Pop. 8633.—The district has an area of 7809 sq. miles; pop. 56,559.

Mergui Archipelago, a chain of islands in the Indian Ocean, off the coast of Tenasserim and Lower Siam, the more northern ones forming a part of the British district of Mergui. The inhabitants are industrious, but few in number.

Merida, a city of Spain, in the province and 30 miles east of Badajoz, on the right bank of the Guadiana, here spanned by a Roman bridge of eighty-one arches, built by Trajan. Other Roman remains are the arch of Santiago; the temple of Diana, now built into a dwelling-house; the theatre, which is almost perfect; the amphitheatre, the circus, the great aqueduct, &c. Merida was the capital of Lusitania for several centuries. Pop. 7390.

Merida, the capital of Yucatan, in Mexico, is situate about 25 miles from the port of Progreso, on the Mexican Gulf, with which it is connected by a railway. It has a Moorish aspect generally, and contains a number of fine squares, a cathedral, bishop's palace, government-house, &c. Merida was founded in 1542. Pop. 1890, 32,000.

Merida, a town of Venezuela, state of Andes, at the foot of the Sierra Nevada, a well-built place, with a university. Pop. 12,018.

Meriden, a town of the U. States in Connecticut, 18 miles N.E. of New Haven. It is largely engaged in the manufacture of iron-castings, tinware, cutlery, brass-work, glass, woollen goods, and plated ware. It contains a state reformatory. Pop. 21,652.

Meridian, one of the innumerable imaginary lines on the surface of the earth that may be conceived of as passing through both poles and through any other given place, and serving to settle the longitude of places and thus to mark their exact position. There are also corresponding lines called *astronomical* or *celestial meridians*, which are imaginary circles of the celestial sphere passing through the poles of the heavens and the zenith of any place on the earth's surface. Every place on the globe has its meridian, and when the sun arrives at this line it is noon or mid-day, whence the name (Latin *meridianus*—*medius*, middle, and *dies*, day). The longitude of a place is its distance—usually stated in degrees, minutes, and seconds—east or west of any meridian selected as a starting-point, just as its lati-

tude is its distance north or south of the equator. In Britain it has long been the custom to count from the meridian of Greenwich as a starting-point; this meridian being called the first meridian, and the longitude of Greenwich being marked 0 or nothing. Other countries, however, had selected their own meridian, with the result that confusion arose among geographers and navigators in localizing any given place. This difficulty was discussed at a national conference held at Washington Oct. 1884, and at last Greenwich was selected as the geographical and astronomical reference meridian of the world, longitude to be reckoned east and west from this up to 180°. It was also arranged that the astronomical day should begin at midnight, 1st January, 1885.

Meridian, Lauderdale co., Miss., an important R. R. terminus. Pop. 1890, 10,624.

Meridian Circle, a mural circle or transit circle.

Mérimée (mā-ri-mā), PROSPER, French poet and prose writer, born 1803, died 1870. He studied law and passed advocate; but employed himself more with literature, and first came prominently forward in 1825 with eight comedies professedly translated from the Spanish of 'Clara Gazul.' He contributed to the *Revue de Paris* and the *Revue des Deux Mondes*; became inspector of historical monuments, in which capacity he travelled through France, and wrote several archæological works; continued to publish romantic tales, such as *Arsène Guillot*, *Carmen*, *Colomba*, &c.; was made a senator in 1853, grand officer of the Legion of Honour, 1866. Among his writings were *The History of Don Pedro I. of Castille* (1848), *Poetry of Modern Greece* (1855), and *Lettres à une Inconnue* (1873), *Travels in various parts of France*, &c.

Merino (me-rē'nō), a twilled woollen tissue, dyed various colours, and often also printed. In the better kind of goods both the warp and the woof are of carded woollen yarn, but in inferior sorts the warp is of cotton. Bradford is the chief seat of the British manufacture, but the French fabrics are held in the highest estimation.

Merino Sheep, a variety of sheep originally peculiar to Spain, but now reared in other parts of Europe, in Australia, New Zealand, &c. They are raised chiefly for the sake of their long fine wool, the mutton being but little esteemed.

Merioneth, or MERIONETHSHIRE, a maritime county in North Wales, bounded by

Carnarvonshire, Denbighshire, Montgomeryshire, Cardiganshire, and by Cardigan Bay; area, 384,717 acres. The coast line is broken and rugged; the surface of the county mountainous, the highest points being Aran Mowddwy (2970 feet) and Cader Idris; the chief rivers the Dee, the Mawddach, the Dovey; and the largest lake Tegid or Bala Mere. The principal minerals are lead, copper, and slates; in 1887 extensive gold-mining operations were begun in the Mawddach valley. The soil is for the most part poor, oats being the chief grain crop; cattle, sheep, and small hardy ponies are reared. Merioneth returns one member to parliament. Chief town, Dolgelly. Pop. 1891, 49,204.

Merivale, CHARLES, D.D., English historian, born 1808, was educated at Harrow, Haileybury, and Cambridge, where he had a distinguished career. He was rector of Lawford, Essex, 1848-69, then became dean of Ely. He wrote *History of Rome*, *Early Church History*, *Boyle Lectures* (1864-65), &c.—HERMAN MERIVALE, his brother, born 1805, died 1874; was professor of political economy at Oxford, and permanent under-secretary of state for India; author of *Historical Studies*, &c.—His son, HERMAN CHARLES, born in 1839, is a rather prolific writer of plays, poems, &c.

Merle. See *Blackbird*.

Merle d'Aubigné (merl dō-bēn-yā), JEAN HENRI, historian and theologian, born at Geneva 1794, died 1872. His education, commenced at Geneva, was completed at Berlin. He became pastor at Hamburg to a French congregation; and removed afterwards to Brussels. Returning to his native city in 1830, he became professor of church history in the theological school founded by the Genevan Evangelical Society. Besides his well-known *History of the Reformation in the 16th Century* (1835-53), he published a supplementary history to the time of Calvin (Paris, 1862-68); *The Protector* (Cromwell), 1847; and the *Recollections of a Swiss Minister*.

Merlin, a legendary Welsh prophet and magician, who is said to have lived in the 5th century. He is said to have been the offspring of a demon and a Welsh princess, and became adviser to the English kings Vortigern, Ambrosius, Utherpendragon, and Arthur. There was also a prophet connected with the ancient kingdom of Strathclyde called Merlin the Wild, or Merlinus Caledonius, who is said to have lived in the 6th century. His prophecies, containing also

those ascribed to the Welsh Merlin, were published at Edinburgh in 1615.

Merlin, the *Falco æsalon* or *Hypotriorchis æsalon*, the smallest of European falcons, being only about the size of a black-bird, but very bold. It was formerly used in hawking quails, partridges, larks, and such small game, and is even yet occasionally trained. It is of a bluish ash colour above; reddish yellow on the breast and belly, with longitudinal dark spots, the throat of the adult male white. It builds its nest on the ground.

Merlon, in fortification, is that part of an embattled parapet which lies between two crenelles or embrasures.

Mermaid and **Merman** were legendary creatures who lived in the sea, possessed a human body united to the tail of a fish, and who were supposed capable of entering into social relationships with men and women. Under various names they were known over Northern Europe, the typical mermaid being a lovely creature who combs her long beautiful hair with one hand while she holds a looking-glass with the other. The origin of this myth is supposed to rest in the human-like appearance of certain aquatic animals, such as the seal. The legends of mermaids and mermen have been largely treated in poetry.

Mermaid's-glove, a name given to the largest of British sponges (*Halichondria palmata*), from its tendency to branch into a form bearing a remote resemblance to a glove with extended fingers. It sometimes attains a height of 2 feet.

Mer'oë, a city and state of ancient Ethiopia, in the north-eastern part of Africa, corresponding mainly with the district between the Nile and Atbara, north of Abyssinia. Meroë was the centre of the caravan trade between Ethiopia, Egypt, Arabia, Northern Africa, and India. There are pyramids at the site of ancient Meroë and a small town of same name on the Nile.

Me'rops, the bee-eaters, a genus of birds forming the type of the family Meropidæ. See *Bee-eaters*.

Merovingians, the first dynasty of Frankish kings which ruled in the northern part of Gaul from 496 to 752, when they were supplanted by the Carolingians.

Merrill, Lincoln co., Wis., largely engaged in manuf. of lumber. Pop. 1890, 6809.

Merrimac, a river of the United States in New Hampshire and Massachusetts. The

immense water-power furnished by its falls has created the towns of Lowell and Lawrence in Massachusetts, and of Nashua and Manchester in New Hampshire.

Merseburg (mer'zè-bûr/h), a town of Prussian Saxony, on the Saale, 14 miles west of Leipzig. It is walled, has an old castle, a cathedral dating from the 11th century, and partly Romanesque partly Gothic in style, old and new town-houses, old monastery of St. Peter, &c. Pop. 16,828.

Mersey, an important river of England, has its origin in several streams which flow from the Pennine Moors and the hills near the borders of Cheshire, Derbyshire, and Yorkshire; receives as affluents the Irwell, Bollin, and Weaver; expands into an estuary 17 miles from its mouth at Runcorn; and its entire length is 60 miles. The principal towns on its banks are Warrington, Stockport, Birkenhead, and Liverpool. The Manchester Ship Canal comprises part of the channel of the Mersey.

Mersey Tunnel, opened in 1886, connects Liverpool and Birkenhead by a railway under the river Mersey. It is 21 feet high, 26 feet wide, and 31 feet below the bed of the river; is 4½ miles long with the approaches, and is ventilated by means of large fans and a small tunnel which runs alongside. The cost of construction is stated to have been £1,250,000.

Merthyr-Tydvil, or TYDFIL, a parliamentary borough of South Wales, county of Glamorgan, 24 miles N.N.W. of Cardiff, on the Taff. It has risen up from a mere village in 1780 to a place of great extent and importance, and though generally consisting of irregular assemblages of workmen's houses situated on both sides of the river, and communicating by two bridges, has recently undergone important changes, which have greatly improved its sanitary condition and general appearance. The town owes its prosperity to its situation near the centre of the valuable coal and mineral field of South Wales. The shipping ports are Swansea and Cardiff. The borough sends two members to parliament. Pop. 104,008.

Merton College, Oxford, first founded at Maldon in Surrey in 1264 by Walter de Merton, bishop of Rochester and lord high-chancellor of England, was removed to Oxford before 1274.

Merv, an oasis in Central Asia, north of Afghanistan, the principal seat of the Teke-Turcomans, who from this centre used to

make predatory incursions into Persia and Afghanistan. In 1815 the oasis was subjugated by the Khan of Khiva, to whom it remained tributary for about twenty years. Subsequently Persia attempted to make good the claims which it had long laid to this district, and in 1860 fitted out an expedition for the purpose, which, however, miscarried completely. In 1881 General Skobeleff led a Russian expedition against the Teke-Turcomans, captured their stronghold of Geok Tepe, and received the submission of the people of Merv. The Russians, who are rapidly extending the area of cultivation by means of irrigation, maintain a body of troops here, and have made it the administrative centre of the Penjeh district, a small town having recently sprung up.

Mesembryan'themum. See *Ice-plant*.

Mes'entery, a membrane in the cavity of the abdomen, attached to the lumbar vertebræ posteriorly and to the intestines anteriorly. It is formed of a duplicature of the peritoneum, and contains adipose matter, lacteals, mesenteric glands, lymphatics, and mesenteric arteries, veins, and nerves. Its use is to retain the intestines in a proper position, to support vessels, &c.

Meshed, a town of north-eastern Persia, capital of the province of Khorasan, 500 miles north-east of Ispahan. It contains the shrine of Imam Ruza, and is the sacred city of the great Mohammedan sect of the Shiites. The chief manufactures are velvets, sword-blades, some silk and cotton goods, and turquoise jewellery. Its situation makes it an important entrepôt of trade. Pop. about 70,000.

Mesmer, FRIEDRICH ANTON, German physician, founder of the doctrine of mesmerism or animal magnetism, was born in 1733, died in 1815. He professed to cure diseases by stroking with magnets, but about 1776 he renounced their use, and declared that his operations were conducted solely by means of the magnetism peculiar to animal bodies. (See *Mesmerism*.) He went to Paris in 1778, where he achieved considerable success and fame and made many converts to his views, but was regarded by the medical faculty as a charlatan. The government at length appointed a committee of physicians and members of the Academy of Sciences to investigate his pretensions. The report was unfavourable, and the system fell into disrepute. Mesmer retired to Swabia, where he died.

Mesmerism, ANIMAL MAGNETISM (*electrobiology, hypnotism*), terms applied to certain peculiar nervous conditions which may be artificially induced, and in which the mind and body of one individual may be peculiarly influenced by another apparently independently of his own will. The term mesmerism is derived from Mesmer (see preceding article), who professed to produce these conditions in others and to cure diseases by the influence of a mysterious occult force residing in himself. This force he called animal magnetism. He held that it pervaded the whole universe, and specially affected the nervous system. The phenomena were known from the earliest ages, when the priests of most of the ancient civilizations affected to cure diseases by the touch of the hand, or threw people into deep sleeps, induced dreams, and produced many of the effects now referred to mesmerism. While the phenomena which Mesmer professed to produce were probably in many cases genuine his theory of animal magnetism rested on no proper scientific basis. He has been followed by many disciples, whose success in producing the mesmeric condition has left no doubt as to the reality of many of the phenomena of mesmerism; but modern scientific investigation, while not fully explaining all these, has shown that they are due to peculiar nervous conditions, and that it is unnecessary to presuppose any occult force to account for them. The means usually employed to produce the mesmeric condition are such as touching and stroking with the hands, according to rule (manipulation), breathing on the person, fixing the eyes on him, &c. It may also, it is said, be produced by causing the patient to stare at an object, especially a bright one, placed in such a position as to strain the eye, the effect being completed by a few passes of the hand over the face without touching it. In the condition thus induced the patient seems to be in a kind of sleep. The limbs will remain in any position in which they may be placed. By stroking the surface of the body the muscles adjacent may be rendered rigid as in a person suffering from catalepsy. Reason and memory are temporarily suspended, the will is paralysed, and the subject is irresistibly impelled to act in accordance with suggestion, however absurd. He can be persuaded into any hallucination, such as that he is some one other than himself, or that he hears or sees, smells or tastes something which has no existence

before him. As a therapeutic agent mesmerism has been successfully employed in certain forms of disease, especially in cases of nervous irritation and sleeplessness, and such diseases in general as have a nervous origin. It has been claimed also by professors of the art that the patient when in this condition can determine the nature of any disease from which he may be suffering and the means of its cure, that he can penetrate the mysteries of the future and hold communication with distant persons. But these last statements cannot be regarded as authenticated.

Many theories similar to that of Mesmer have been propounded to account for these phenomena, *e.g.* that of the Baron von Reichenbach of the existence of an 'influence' developed by certain crystals, the human body, &c., existing throughout the universe, which he called *odyl*; that of electro-biology, which attributes them to electric currents in the human body; and the theories of spiritualism and clairvoyance, which attribute them to spiritual influences. The first step towards scientific investigation of them was taken by James Braid, a surgeon in Manchester, who attempted a physiological explanation of them in a paper read before the British Association at Manchester in 1842, and in a work published in 1843 entitled *Neurypnology*. To him we owe the term hypnotism (Greek *hypnos*, sleep). Scientific investigation has since been devoted to the subject to a considerable extent. It has been recently investigated with great care by Dr. Heidenhain of Breslau, the results of his labours being published in a small work entitled *Animal Magnetism* (English translation, London, 1880). He attributes the phenomena to what is known by physiologists as the inhibitory action of the nerves. Such action, he holds, is induced by the process of mesmerizing, and has the result of suspending the action of that portion of the brain which is devoted to voluntary movements, thus putting the patient in a condition in which involuntary movements may be induced by impressions made upon the senses. Professors of mesmerism frequently give public exhibitions of the simpler phenomena by means of voluntary subjects. These exhibitions are more of an amusing than of an instructive or scientific nature.

Mesne (mēn), in law, middle or intervening. *Mesne process* is defined by Wharton

as "all those writs which intervene in the progress of a suit or action between its beginning and end, as contradistinguished from primary and final process."

Mesopota'mia, a name given by the Greeks to the extensive region inclosed by the Tigris and Euphrates, anciently associated with the Assyrian and Babylonian monarchies. Its Old Testament name is *Aram Naharaim*, or *Padan Aram*. The Greek title was probably not in use till after Alexander the Great invaded the East. This country is inhabited chiefly by Arabs, Kurds, and Armenians. Many of them are nomadic, and their chief occupation is the grazing of cattle. Mesopotamia is now part of the Turkish Empire.

Mesothorax, in entomology, the middle rising of the thorax.

Mesozo'ic Period (from Gr. *mesos*, middle, and *zoē*, life), the term applied by geologists to the geological period between the Palæozoic and the Cainozoic. It is coextensive with the secondary formations, and includes the rocks of the Triassic, Oolitic, and Cretaceous groups.

Mes'pilus, the medlar, a genus of trees.

Mesquite (*Prosōpis glandulōsa*), a small tree allied to the acacia, common in Mexico, Texas, and other parts of western N. America. It yields a gum not much inferior to gum arabic; its seeds are eaten, and a drink is prepared from the mucilage of its pods. Another species (*P. pubescens*) has pods that are eaten by the Indians, being rich in saccharine matter. They are of a twisted form, hence the name 'screw bean.'

Mess, in sea language, denotes a particular company of the officers or crew of a ship, who eat, drink, and associate together; in military language, a sort of military ordinary, established and regulated by the rules of the service, for all the officers in a regiment, and supported by their joint subscriptions, supplemented by a small government allowance. Similar institutions are extended to the non-commissioned officers of a regiment, but the technical meaning of messing as applied to officers does not hold with regard to common seamen and soldiers.

Messali'na, VALERIA, the third wife of the Roman emperor Claudius. She is notorious in history on account of her licentiousness and cruelty. She was murdered A.D. 48.

Messa'na. See *Messina*.

Messengers, KING'S or QUEEN'S, certain officials employed under the secretaries of state, who are always ready to convey despatches foreign and domestic.

Messengers-at-Arms, legal officers in Scotland appointed by the Lyon King-at-arms, and under his control, employed in executing all summonses and letters of diligence both in civil and criminal cases that are to be tried before the Courts of Session and Justiciary in Scotland.

Messe'nia, a country of ancient Greece, in the southern part of the Peloponnese. Its capital was Messēnē, with the mountain fortress Ithōmē. On its southern coast lay the Messenian Gulf (now the Gulf of Coron). A ridge of Mount Taygētus separated it from Sparta. Messenia is celebrated for the long struggle of its inhabitants in defence of their liberty with the Lacedæmonians, with whom they waged three wars, the first extending from 743–724 B.C., the second from 685–668 B.C., and the third from 464–456 B.C.—Messenia gives name to a nomarchy in modern Greece, with an area of 1221 square miles, and a pop. (1889) of 183,232.

Messi'ah (Greek form, *Messias*; Hebrew, *Mashiach*), corresponding to the Greek *Christos* of the New Testament, that is, 'anointed,' has in the Old Testament several applications, as to the whole Jewish people, to the priests, to the kings ('the Lord's Anointed'), and even to Gentile kings, as persons who had been anointed with holy oil. The designation, however, owes its special importance to the application of it in the prophetic books of the Old Testament to an ideal holy king and deliverer whose advent they foretold. The whole of the prophetic pictures agreed in placing Jehovah in the central place of the desired kingship. These prophecies, which are called the Messianic prophecies, had at the time of our Lord come to be applied by the Jews to a temporal king who should free them from foreign oppression. They are affirmed by Jesus Christ and His apostles to apply to and be fulfilled in him; and this is the belief of the Christian Church, by which he is called 'The Messiah.' The rationalistic school of theologians assert that Jesus laid claim to the dignity either to meet the preconceptions of his countrymen, or because he felt that the truth which he taught was the real kingdom never to be destroyed which the God of Heaven was to set up.

Messi'na (ancient Greek name, *Zanklē*; Latin, *Messāna*), the chief commercial town and seaport of Sicily, capital of the province and on the strait of the same name. The harbour is one of the best in the Mediter-

anean, and the town is well-built. The manufactures consist chiefly of silk goods. The principal exports are silks, olive-oil, oranges, lemons, and other fruits; wine, salted fish, lemon-juice, essences, &c. Messina possesses a university, founded in 1548, with a public library of 56,000 volumes. The town was founded in the 8th century B.C. Pop. 78,438.—The province of Messina has an area of 1768 sq. miles, and a pop. of 460,024.

Messina, STRAIT OF, the strait which separates Sicily from Italy. It has a length of about 20 miles, and varies in width from 2 miles in the north to 11 miles in the south, is very deep, and has a strong tidal current.

Mes'suage, in law, is the term used for a dwelling-house with a piece of land attaching, as garden, orchard, &c.; and all other conveniences, as out-buildings, &c., belonging to it. The term is derived from the French *mesuage*.

Mestizos (mes-tē'zōs), people of mixed origin in countries where Spanish Europeans have settled and intermingled with the natives.

Meta, a great river of S. America, a tributary of the Orinoco, which it joins in Venezuela, though the greater part of its course is in Colombia; length 700 miles.

Metab'ola (Greek, *metabolē*, change), a term applied to insects that undergo metamorphosis.

Metacarpus, in anatomy, the part of the hand between the wrist and the fingers. See *Hand*.

Met'acentre, in physics, that point in a floating body in which, when the body is disturbed from the position of equilibrium, the vertical line passing through the centre of gravity of the fluid displaced (regarded as still filling the place occupied by the body) meets the line which, when the body is at rest, passes through the centre of gravity of the fluid and that of the body. In order that the body may float with stability the position of the metacentre must be above that of the centre of gravity.

Metagen'esis. See *Generation (Alternate)*.

Met'alloid, in chemistry, a term applied to all the non-metallic elementary substances. The metalloids include oxygen, hydrogen, nitrogen, carbon, chlorine, bromine, iodine, fluorine, sulphur, selenium, phosphorus, boron, and silicon.

Metallurgy (met'al-ēr-ji), the art of working metals, comprehending the whole pro-

cess of separating them from other matters in the ore, smelting, refining, &c.

Metals. Elementary substances have been divided by chemists into two classes, *metals* and *non-metals* or *metalloids*, but these merge one into the other by gradations so imperceptible that it is impossible to frame a definition which will not either include some non-metallic bodies or exclude some metallic. The term metal is an ideal type, and is applied to those elementary substances which in the combination of physical characteristics which they present approach more or less nearly to it. The following are the chief characteristics of metals. They are opaque, having a peculiar lustre connected with their opacity called *metallic*; insoluble in water; solid, except in one instance, at ordinary temperatures; generally fusible by heat; good conductors of heat and electricity; capable, when in the state of an oxide, of uniting with acids and forming salts; and have the property, when their compounds are submitted to electrolysis, of generally appearing at the negative pole of the battery. Many of the metals are also malleable, or susceptible of being beaten or rolled out into sheets or leaves, and some of them are extremely ductile or capable of being drawn out into wires of great fineness. They are sometimes found native or pure, but more generally combined with oxygen, sulphur, and some other elements, constituting *ores*. The great difference in the malleability of the metals gave rise to the old distinction of *metals* and *semi-metals*, which is now disregarded. The following—fifty-two in number—are the elementary substances usually regarded as metals:—aluminium, antimony, barium, beryllium or glucinum, bismuth, cadmium, cæsium, calcium, cerium, chromium, cobalt, columbium or niobium, copper, didymium, erbium, gallium, germanium, gold, indium, iridium, iron, lanthanum, lead, lithium, magnesium, manganese, mercury, molybdenum, nickel, osmium, palladium, platinum, potassium, rhodium, rubidium, ruthenium, scandium, silver, sodium, strontium, tantalum, tellurium, terbium, thallium, thorium, tin, titanium, tungsten, uranium, vanadium, yttrium, zinc, zirconium. Of these gold, silver, copper, tin, lead, zinc, platinum, iron, are the most malleable; gold, which possesses the quality in the greatest degree, being capable of being beaten into leaves $\frac{1}{10000}$ of a millimetre in thickness. The following, given in the order of their ductility, are the most ductile:—platinum, sil-

ver, iron, copper, gold, aluminium, zinc, tin, lead, platinum wire having been obtained of not more than $\frac{1}{1200}$ of a millimetre in diameter. The majority of the useful metals are between seven and eight times heavier than an equal bulk of water; platinum, osmium, and iridium are more than twenty times heavier; while lithium, potassium, and sodium are lighter. The metals become liquid, or otherwise change their condition, at very various temperatures: platinum is hardly fusible at the highest temperature of a furnace; iron melts at a little lower temperature; and silver somewhat lower still; while potassium melts below the boiling-point of water, and becomes vapour at a red heat, and it and sodium may be moulded like wax at 16° C. (61° Fahr.). Mercury is liquid at ordinary temperatures, and freezes only at 39½° C. below zero (–39° Fahr.). Osmium and tellurium are also regarded by some as non-metals. All the metals, without exception, combine with oxygen, sulphur, and chlorine, forming *oxides*, *sulphides*, and *chlorides*, and many of them also combine with bromine, iodine, and fluorine. Several of the later discovered metals exist in exceedingly minute quantities, and were detected only by spectrum analysis, and there is every likelihood that research in this direction will add to the present list of metals.

Metam'erism, in chemistry, the character in certain compound bodies differing in chemical properties, of having the same chemical elements combined in the same proportion and with the same molecular weight; thus, aldehyde (C₂H₄O) and oxide of ethylene (C₂H₄O) have their elements in the same proportion and the same molecular weight, 44. Metameric bodies do not, however, belong to the same class or series of compounds. See *Isomerism*, *Polymerism*.

Metamor'phic Rocks, in geology, stratified or unstratified rocks of any age whose original texture has been altered and rendered less or more crystalline by subterranean heat, pressure, or chemical agency. The name is given more especially to the lowest and azoic, or non-fossiliferous, stratified rocks, consisting of crystalline schists, and embracing granitoid schist, gneiss, quartz-rock, mica-schist, and clay-slate, most of which were originally deposited from water and crystallized by subsequent agencies. They exhibit for the most part cleavage, crumpling, and foliation, and their lines

of stratification are often indistinct or obliterated.

Metamor'phosis, any change of form, shape, or structure. In ancient mythology the term is applied to the transformations of human beings into inanimate objects, with which ancient fable abounds. In zoology it includes the alterations which an animal undergoes after its exclusion from the egg or ovum, and which alter extensively the general form and life of the individual. All the changes which are undergone by a butterfly in passing from the fecundated ovum to the imago, or perfect insect, constitute its *development*—each change, from ovum to larva, from larva to pupa, and from pupa to imago, constituting a *metamorphosis*. Insects which undergo a complete metamorphosis are known as *Heteromorphous* or *Holometabolic* insects. Others, such as the grass-hoppers, locusts, bugs, dragon-flies, &c., undergo a less perfect series of changes, and are termed *Hemimetabolic* or *Homomorphous* insects. The occurrence of metamorphosis is by no means confined to the lowest groups of the animal series, for we find the amphibian vertebrates—as in the case of frogs, newts, and their allies—exemplifying these phenomena in a very striking manner. The metamorphoses of the Annulosa, however, including the insects, crustaceans, worms, &c., are among the most marked and familiar with which we are acquainted.

Met'aphor, a figure of speech founded on the resemblance which one object is supposed to bear, in some respect, to another, and by which a word is transferred from an object to which it properly belongs to another in such a manner that a comparison is implied, though not formally expressed. It may be called a simile without any word expressing comparison. Thus, 'that man is a fox,' is a metaphor; but 'that man is like a fox,' is a simile. So we say, a man *bridles* his anger; beauty *awakens* love or tender passions; opposition *fires* courage.

Metaphys'ics (Gr. *meta*, after, and *physica*, physics), a word first applied to a certain group of the philosophical dissertations of Aristotle which were placed in a collection of his manuscripts after his treatise on physics. As since employed, it has had various significations, and latterly it has been understood as applying to the science which investigates the ultimate principles that underlie and are presupposed in all being and knowledge. In the part of the Aristo-

telian treatise alluded to the problems were concerned with the contemplation of being as being, and the attributes which belong to it as such. This implies that things in general must be divided into beings or things as they are, and into phenomena or things as they appear. In modern usage metaphysics is very frequently held as applying to the former division, that is to the ultimate grounds of being. To attain this end it takes into account the correlative of being, that is, knowledge; and of knowledge not as coming within the province of logic or of mental philosophy, but as it is in relation to being or objective reality. In this respect metaphysics is synonymous with ontology. The science has also been considered as synonymous with psychology, and to denote that branch of philosophy which investigates the faculties, operations, and laws of the human mind.

Metastasio, PIETRO BUONAVENTURA, Italian poet, born at Assisi in 1698, died at Vienna 1782. His true name was Trapassi, and his father was a common workman. His poetical talents were early displayed in making rhymes and in improvisations. The lawyer Gravina, who accidentally became acquainted with his talents, took him under his protection, called him (by an Italianized translation of his name into Greek) *Metastasio*, paid great attention to his education, and on his death, in 1717, left him his whole estate. Two years afterwards, having spent his fortune, he entered a lawyer's office in Naples. There in 1722 he wrote a serenade for the birthday of the empress which brought him the favour of the Roman prima donna, Marianna Bulgarelli, called La Romanina. He resided with La Romanina and her husband in Rome till 1729, and during that time produced many operas, commencing with the *Didone Abbandonata* in 1724. His success was such that Charles VI. invited him to Vienna in 1729, and appointed him poet laureate with a pension of 4000 guilders. Metastasio may be said to be the father of the modern Italian opera. His works, while not possessing the highest literary merit, were eminently fitted for musical effect.

Metatarsus, the part of the foot popularly known as the 'instep.' See *Foot*.

Metauro (anciently *Metaurus*), a river of Italy, in the Marches, which after a E.N.E. course of about 50 miles, falls into the Adriatic.

Metay'er, a cultivator who tills the soil for a land-owner on condition of receiving

a share, generally a half of its produce, the owner furnishing the whole or part of the stock, tools, &c. The phrase *metayer system* is applied to that mode of land cultivation, practised chiefly in France and Italy, in which the land is cultivated by metayers.

Metazoa (met-a-zō'a), one of the two great sections into which Huxley divides the animal kingdom, the other being the Protozoa. The lowest of the Metazoa are the Porifera or sponges. That portion of the Metazoa which possess a notochord, constitute the sub-kingdom Vertebrata: the rest are invertebrate.

Metempsychosis, transmigration; the passage of the soul from one body to another. See *Transmigration of the Soul*.

Me'teor, a name originally given to any atmospheric phenomenon; it is now more usually applied to the phenomena known as shooting-stars, falling-stars, fireballs or bolides, aerolites, meteorolites, meteoric stones, &c. It is now generally believed that these phenomena are all of the same nature, and are due to the existence of a great number of bodies, some of them very small indeed, revolving round the sun, which, when they happen to pass through the earth's atmosphere, are heated by friction and become luminous. Under certain circumstances portions of these bodies reach the earth's surface, and these are known as meteorites or meteoric stones. These stones consist of known chemical elements. They have this peculiarity, that whereas native iron is extremely rare among terrestrial minerals, it usually forms a component part in meteorites, and is known as meteoric iron. Exceptionally large showers of meteors appear in August and November every year, and the November showers exhibit a maximum brilliancy every 33 years. As to the connection of meteors with comets see *Comets*.

Meteoric Iron. See *Iron (Native)*, and *Meteor*.

Meteoric Stones. See *Meteor*.

Meteorology, the science or branch of knowledge that treats of atmospheric phenomena relating to weather and climate. The phenomena with which it deals and the instruments used in their observation are mainly these, viz.: temperature (thermometer), humidity (hygrometer), atmospheric pressure (barometer), wind (anemometer), rainfall (rain-gauge), and clouds. These phenomena are all referable to the action of the sun, and accordingly present variations

depending upon locality (including the infinitely varied physical features of different places), the diurnal revolution of the earth upon its axis, and the annual revolution of the earth round the sun. It is the business of meteorology to examine the laws which regulate these variations. It pursues its inquiries in two directions, (1) with reference to the variations observed at different times in the same locality with the view of obtaining average results as to its climate—climatology, and (2) with reference to the variations observed in different localities at the same time with the view of arriving at the laws which regulate the changes in the weather—weather study. In the prosecution of this study observations are taken at the same hour of Greenwich time at a number of stations situated over a large extent of the earth's surface. These observations include readings of barometer, thermometer, hygrometer, rain-gauge, anemometer, &c., with non-instrumental observation of clouds. The results which indicate the phenomena existing at that hour at the several stations are tabulated, or registered, formed into weather charts, &c. These charts are made by putting down on a map readings taken at the same moment over a large tract of country, and joining by lines the points where the readings agree. Since the general use of the electric telegraph this branch has assumed great practical importance. By its means observations made at many distant places may be immediately communicated to one centre, and men of science are thus enabled to forecast with considerable accuracy the weather which may be expected in certain districts. Such forecasts can be made with great accuracy in tropical and sub-tropical countries where the atmospheric conditions are very constant, and variations from the average are consequently easily observed. They are attended with much more difficulty in temperate countries. In the British Isles they are exceptionally difficult owing to the fact that on the side from which nearly all weather changes come, namely, the west, the existence of the Atlantic Ocean renders telegraphic warning of changes of weather impossible. The fact that a storm is travelling eastward may be telegraphed from America, but there is always a chance of its being dissipated or deflected long before it reaches the coasts of Europe. It having been observed, however, that a storm is always preceded by a fall of the barometer,

the tendency to fall is observed some time before the minimum depression occurs; the notice of this tendency, together with observations of the wind and motions of cirrus clouds, enables storm warnings to be sent from observatories to the Meteorological Office established by government in London, whence they are telegraphed to the various parts of the United Kingdom. The further eastward we travel in Europe the easier does the forecasting of the weather become. In the United States, where the majority of storms rise in the district to the west of the Mississippi, and are thus capable of easy observation, great accuracy has been attained. The Weather Bureau originated in 1870, as an attachment to the Signal Service Office of the War Department. In 1891 it was transferred by law to the Department of Agriculture, its functions being closely allied to that interest. Its predictions of the coming weather (now termed "forecasts") seldom extend beyond twenty-four to thirty-six hours in advance, and are telegraphed and published in bulletins twice daily. See *Cyclone*, *Anti-cyclone*, *Climate*, &c.

Methane, the systematic name for marsh-gas. See *Marsh-gas*.

Metheg'lin, a name for the liquor otherwise called *Mead*.

Meth'odists, a sect of Christians founded by John Wesley, so called from the fact that the name was applied to Wesley and his companions by their fellow-students at Oxford, on account of the exact regularity of their lives, and the strictness of their observance of religious duties. The religious movement which resulted in the foundation of this sect began at Oxford in 1729, the chief leaders besides John Wesley being his brother Charles and George Whitefield (see *Wesley*, *Whitefield*). The first general conference of the Methodists was held in 1744, and the Methodists were constituted a legally corporate body in 1784. Their doctrines are substantially those of the Church of England. The appointment of a minister of the body to any place is always for three years. There are in addition to the ordained ministers lay preachers, leaders, trustees, and stewards. The body is governed by an annual conference, having at its head a president and secretary, whose term of office lasts but for a year. In each district the ministers hold half-yearly meetings, the several chairmen being appointed by the conference. There are also quarterly cir-

cuit meetings of ministers and lay officers. The supreme legislative and judicial power is vested in the conference, to which the half yearly and quarterly district and circuit meetings are subordinated. The number of members at Wesley's death was 76,968; but the denomination has increased with such marvellous rapidity, that there are said to be in different parts of the world above 28,000,000 adherents. Various secessions have from time to time taken place from the original body, which, though differing as to points of church government, generally agree as to doctrine. The chief of these bodies are—the *Calvinistic Methodists*, which originated in a difference between Wesley and Whitefield regarding the Calvinistic doctrines; they have been organized into three denominations, *Lady Huntingdon's Connexion*, the *Whitefield Methodists*, and the *Welsh Calvinistic Methodists*; the *Methodist New Connexion*, founded in 1797–98 by Alexander Kilham; *Primitive Methodists*, founded by two lay preachers, Hugh Bourne and William Clowes (1808–10); *Bible Christians*, founded by a Cornish local preacher named O'Bryan; the *Wesleyan Reform Union*, and the *United Methodist Free Churches*, originating in the *Wesleyan Methodist Association* of 1836, with the subsequent additions of the *Protestant Methodists* of 1828, and the seceders from the parent connection in 1850–52. The Methodists are especially numerous in North America, forming numerically the leading denomination in the United States. The *Methodist Episcopal Church* is the oldest and leading Methodist body in America. Since 1845 it has been divided into two branches, the Methodists of the Southern States forming what is called the *Methodist Episcopal Church, South*.

Meth'yl (CH_3), the name given to the hypothetical radical of methyl alcohol which is contained in wood spirit. It is analogous to ethyl in its chemical characters.

Methylated Spirit, spirit of wine containing 10 per cent of wood naphtha, which contains a large proportion of methyl alcohol. The naphtha communicates a disagreeable flavour, which renders it unfit for drinking, and for this reason it is admitted duty free. It is of much use in the arts as a solvent for preserving specimens, in manufacture of varnishes, for burning in spirit-lamps, &c.

Methyl alcohol, alcohol obtained by the destructive distillation of wood.

Metonic Cycle, Metonic Year, the cycle of the moon, or period of nineteen years, in which the lunations of the moon return to the same days of the month: discovered by Meton, an Athenian mathematician who flourished 432 B.C.

Meton'ymy, a figure in rhetoric by which the name of an idea or thing is substituted for that of another, to which it has a certain relation. Thus the effect is frequently substituted for the cause, as when *gray hairs* stands for *old age*; a part for the whole, as when *keel* is put for the whole *ship*; the abstract for the concrete, as 'What doth *gravity* (this *grave person*) out of his bed at midnight?'

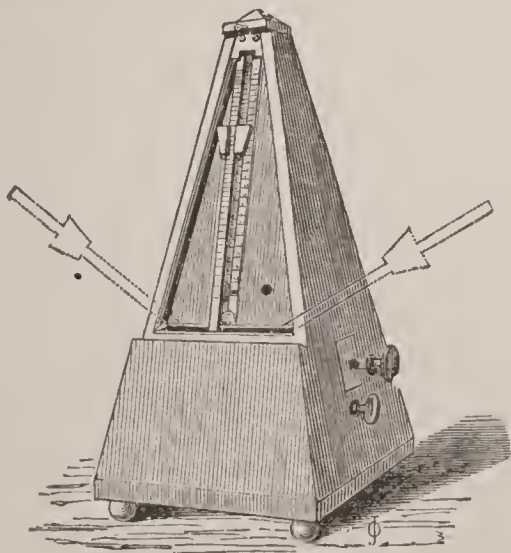
Metope, in architecture, the interval or square space between the triglyphs in the Doric frieze.

Metre, rhythmical arrangement of syllables into verses, stanzas, strophes, &c. See *Rhythm, Verse*.

Metre, MÈTRE (French pron. mǎ-tr), a French measure of length, equal to 39.37 English inches or 3.28 feet, the standard of linear measure, being the ten-millionth part of the distance from the equator to the North Pole, as ascertained by actual measurement of an arc of the meridian.

Metric System of Weights and Measures. See *Decimal System*.

Met'ronome, an instrument consisting of a weighted pendulum moving on a pivot and set in motion by clock-work; invented about 1814, for the purpose of determining, by its vibrations, the quickness or slowness with which musical compositions are to be



Metronome, showing extent of vibrations.

executed, so as to mark the time exactly. There is a sliding weight attached to the pendulum rod, by the shifting of which up

or down the vibrations may be made slower or quicker. A scale indicates the number of audible beats given per minute, and this must be made to agree with the number attached to the music by its composer.

Metrop'olis, properly a mother-city, a city in relation to colonies it had sent out; but the term is now applied to the chief city or capital of a state or country.

Metropolitan, originally a bishop resident in a metropolis or the chief city of a province, now a bishop having authority over the other bishops of a province; that is, an archbishop. In the Greek Church, the title of a dignitary intermediate between patriarchs and archbishops.

Metroside'ros, a genus of trees and shrubs,



Iron-wood (*Metrosidēros vera*).

nat. order Myrtaceæ. *M. vera*, known as iron-wood, is a tree, a native of Java and Amboyna. Of the wood of this tree the Chinese and Japanese make rudders, anchors, &c. *M. robusta* is the rata of New Zealand, where it is employed in ship-building and in other ways. The trees of this genus have thick, opposite, entire leaves, and heads of showy red or white flowers.

Metternich (met'tér-nih), CLEMENS LOTHAR WENZEL, Prince von Metternich, Austrian statesman, born 1773, died 1859. He represented Austria as ambassador at various European courts between 1801 and 1809. In the latter year he became minister of foreign affairs. In this capacity he negotiated the marriage of the Archduchess Maria Louisa with Napoleon, and conducted her to Paris. In 1813, after the French reverses in Russia, Austria gave in her adhesion to the other allied powers,

and declared war against France. From this period the policy, not only of Austria, but in a great measure that also of the leading continental powers, was shaped by Metternich. He was one of the plenipotentiaries who signed the Treaty of Paris, and he presided at the Congress of Vienna (1814). The object of his policy was to arrest the progress of what were called revolutionary principles. With this view he formed the scheme known as the Holy Alliance. He continued in power till, by the revolution of 1848, he was driven from office, and had to flee to England, where he remained till 1851, when he returned and lived in retirement at Vienna.

Metz, a town and important fortress of Alsace-Lorraine, on the Moselle, which here divides into several arms, 79 miles north-west of Strasburg. The major part of the town stands on a height within the fortifications, outside of which there is a series of strong detached forts. The cathedral is a late Gothic structure, surmounted by a spire of open work 397 feet high. The manufactures consist of woollens, cottons, hosiery, hats, muslin, glue, leather, &c. A battle was fought under its walls between the Germans and French in August, 1870, the Germans subsequently invested it, and being reduced to a state of famine, on October 28 it capitulated with 180,000 officers and men under the command of Marshal Bazaine. It was included in the cession of territory to Germany at the peace of 1871, and its fortifications have been greatly strengthened since. Pop. 1890, 60,186.

Meudon (*meu-dōn*), a town in France, department Seine-et-Oise, 6 miles E.N.E. Versailles, a favourite holiday resort of the Parisians. Rabelais was for a short time curé of Meudon. Pop. 7621.

Meulen (*meu'len*), ANTHONY FRANCIS VAN DER, a battle painter, born at Brussels 1634, and died in 1690. He was employed by Louis XIV. to paint the scenes of his military campaigns, and thus his pictures chiefly consisted of landscapes with numerous figures.

Meung, or MEUN, or MEHUN, (*meun*), JEAN DE, a French poet, surnamed from his lameness *Clopinet*, was born at Meung sur Loire, about 1250, died about 1322. He lived at the court of Philippe le Bel, and enjoyed a high reputation as a scholar, a poet, and a satirist. His principal work was his continuation of the Roman de la Rose, begun by Guillaume de Lorris.

Meurthe (*meurt*), LA, a river of France, which rises on the western side of the Vosges, and joins the Moselle about 7 miles N. of Nancy; total course about 100 miles.

Meurthe-et-Moselle (*meurt-è-mo-zel*), a department of north-east France, formed in 1871 by uniting portions of the old departments of Meurthe and Moselle, in consequence of the cession by France to Prussia of a portion of her territory on the east under the treaty of Frankfort (10th May, 1871); area, 2024 square miles. The chief river is the Moselle. The soil is generally fertile. The principal cereals are wheat, oats, and barley. Fruits are extensively grown, and the annual yield of the vines exceeds \$4,500,000. The principal mineral products are iron ore and salt. Large quantities of iron and steel are now made. Among manufactures may be mentioned machinery, tools and other articles of iron-ware; woollens and cottons; glass, paper, earthenware, leather, &c. The capital is Nancy. Pop. 1891, 444,150.

Meuse (*meuz*; Latin, *Mosa*, Flemish, *Maes*, Dutch, *Maas*), a European river, which rises in France, in the south of the department Haute-Marne, and flows through France, Belgium, and Holland. Its principal affluents are the Sambre, which joins it on the left at Namur, and the Ourthe, which joins it on the right at Liège. At Gorkum it joins the Waal, one of the arms of the Rhine, and gives its name to the united streams. It is divided near Dordrecht into two great rivers, the one of which bends round to the north and reaches Rotterdam; the other branch continues west; and shortly after the two branches again unite and discharge themselves into the North Sea. Its length, including windings, is 580 miles. It is navigable for about 460 miles. The principal towns on its banks are Namur, Huy, Seraing, Liège, Maestricht, Rotterdam, Schiedam, and Vlardingem.

Meuse, a north-east department of France; area, 2404 sq. miles. The only mineral of importance is iron, which is extensively worked. Rather more than one-half of the whole surface is arable, and little of it is waste. The principal crops, besides corn, are hemp, flax, and oleaginous seeds, and considerable tracts are covered with vines, which yield wine of good name. The manufactures are varied. Bar-le-Duc is the capital. Pop. 1891, 292,253.

Mex'ico, or MEJICO (*mā'hi-kō*), a republic of North America, between the United



MEXICO



MEXICO.

States and Central America, and having on the east the Gulf of Mexico, on the west the Pacific Ocean; area estimated at 751,494 sq. miles. Nearly one-half of this territory lies within the torrid zone, but the peculiar geological structure of the republic, that of an elevated plateau rising into volcanic peaks, supported by the two branches of the Mexican Cordilleras, the North-east and North-west, causes the greatest diversity of climate. The principal summits, all of volcanic origin, are Popocatepetl (Smoking Mountain), 17,884 feet, still indicating its activity by occasional clouds of smoke and ashes; Orizaba, or Citlaltepétl (Star Mountain), 17,373; and Ixtaccihuatl (White Lady), 15,704. All these are above the limit of perpetual snow, which is here about 15,000 feet. The largest river is the Rio Grande del Norte, forming part of the boundary with the United States; most of the others are rather insignificant. The lakes, which abound, are individually of little importance; some of them have no outlet. Mexico is a country of great natural resources. There is a vast variety of useful indigenous trees and plants, and many others have been introduced. The principal agricultural products are maize and other corn, sisal-hemp, tropical fruits, cotton, coffee, sugar, tobacco, indigo, vanilla, cochineal, &c. Large numbers of cattle are reared, especially in the north. The chief industries (besides agriculture and mining) are the manufacture of cottons and woollens, pottery, tobacco and cigars, leather, soap, sugar-refining, brewing and distilling (principally from the agave or maguey), &c. Mexico is rich in minerals, especially gold and silver, which are far the most valuable of the exports. The Mexican ports on the Atlantic side are most of them insecure, and many of them are mere roadsteads. On the western coast there is, however, a series of magnificent ports, from Acapulco to Guaymas, many of which are scarcely if at all frequented. The imports consist chiefly of cotton, woollen, and linen manufactures, wrought-iron, and machinery; and the exports of the precious metals, sisal-hemp, coffee, hides, and mahogany and other woods. There are (1892) 6600 miles of railway open for traffic, 21,900 miles of telegraph, and 4174 miles of telephone.

Administration, &c.—The republic is divided into twenty-seven states; one territory, Lower California; and the Federal District, which comprises Mexico, the capital of the republic, and a small portion of adjoining

territory. The population in 1891 was 11,632,924. The proportion of the different races in the population is believed to be 20 per cent of pure whites, 43 per cent of mixed race, and the remainder Indians. The Creoles are naturally the dominant race, and the Spanish language is generally spread over Mexico. Roman Catholicism, the state religion of Mexico until 1857, is still the prevailing religion. But there is now no connection between church and state. All religions are tolerated, but no religious body can own landed property. Primary education is compulsory, but the law is not strictly enforced. The schools are supported partly by the central and partly by the state government, and partly by charitable foundations supported by voluntary subscriptions. The present form of government is that of a federal republic, each member of which manages its own internal concerns. The supreme executive power is vested in a president, who has powers very similar to those of the President of the United States. The revenue usually amounts to \$40,000,000; the debt, foreign and domestic, 1890, amounts to \$113,606,675. There is an army numbering on the peace footing 27,244 men. The annual exports amount to about \$60,000,000; the imports, \$44,500,000.

History.—Prior to 1521 Mexico was inhabited by an Aztek race and ruled by native emperors. (See *Azteks*.) This race had attained a remarkable degree of civilization, and interesting remains of their architecture are existent in the teocallis or pyramids of Cholula, Pueblo, and Papantla. In 1521 Mexico fell into the hands of the Spaniards under Hernando Cortez. Cortez called it *New Spain*, and was created captain-general, but in 1535 was displaced by a viceroy. From that date till 1821 the country was one of the viceroyalties of Spanish America, and governed by a series of viceroys possessed of almost absolute power. The spirit of discontent engendered by the selfishness of the Spanish rule manifested itself in open rebellion, when, in 1808 the deposition of King Ferdinand by Napoleon and the unsettled state of affairs in Spain afforded an opportunity. This rebellion, begun by a priest, Hidalgo, and continued with more or less vigour till 1821, secured in that year the independence of Mexico. After an unsuccessful attempt to secure a Bourbon prince for the throne, Iturbide, the chief of the insurgents, caused himself to be proclaimed emperor, May 18, 1822, under the

title of Augustin I., but was forced to abdicate, March 1823. A new form of government, on federal republican principles, was then established, the constitution being adopted and proclaimed in 1824. Since the acquisition of its independence Mexico has had a most unsettled history and has been the scene of almost incessant civil wars. The Austrian archduke Maximilian reigned as emperor from 1864 to 1867. Mexico has been at war with Spain, United States, allied armies of Spain, France, and England, and with France. In 1871 Juarez was elected president, succeeded by Lerdo de Tejada, who in 1876 was overthrown by Porfirio Diaz, who has shown himself to be an able president, re-elected in 1888.

Mexico, capital of the republic of Mexico, is situated within the state of Mexico in the Federal District (461 sq. miles), about 7400 feet above the level of the sea, near several lakes. It is situated at about an equal distance from Vera Cruz on the Mexican Gulf, and Acapulco on the Pacific, and is laid out with great regularity. It is on the site of the ancient city of Tenochtitlan, which was destroyed on the capture of Mexico by the Spaniards in 1521. The principal public buildings are the cathedral, about 500 feet in length and 420 feet in width, forming one of the sides of the central square; the palace of government; the college of mines, a noble building, but now somewhat dilapidated; the mint, with a front of 360 feet by 250 in depth, the town-house, the university, &c. There are numerous convents, hospitals, churches, theatres, &c. The manufactures are of comparatively limited extent, and the trade is mostly in the hands of foreigners. Mexico enjoys a mild climate, and a pure and healthy atmosphere. Pop. 1891, 329,535.

Mexico, one of the states of the Mexican republic; area, 7838 square miles. It lies in the south of Mexico, and forms an elevated region, one of the best cultivated and most thickly peopled parts of the republic. Its capital is Toluca, but it embraces within its boundaries the city and Federal District of Mexico. Pop. 1891, 798,480.

Mexico, GULF OF, a large bay or gulf of the Atlantic, oval in form, and nearly surrounded by a continuous coast line 3000 miles in length, of the United States and Mexico; estimated area, 800,000 square miles. It gives name to the Gulf Stream, which issues from it by the Strait of Florida.

Meyerbeer (mī'cr-bār), GIACOMO, musical composer, born in Berlin 1791, died at Paris 1864. His father, Jakob Beer, was a rich banker of Jewish descent. He gave early proof of his devotion to music, and at nine was regarded as one of the best pianists in Berlin. He studied under Bernhard Anselm Weber at Berlin, and the Abbé Vogler at Darmstadt, where he began his life-long friendship with Karl Maria von Weber. His first two operas, *Jephtha's Daughter* and *Abimelek*, the one produced at Munich and the other at Vienna, having failed, he went to Italy. There he rapidly composed a series of operas in the Italian style, which were generally well received: —*Romilda e Costanza* (1818, for Padua); *Semiramide Riconosciuta* (1819, for Turin); *Emma di Resburgo* (1820, for Venice); *Margherita d'Anjou* (1822, for Milan); *L'Esule di Granada* (1823, likewise for Milan); and *Il Crociato in Egitto* (1824, for Venice). In 1826 he went to Paris. There he produced *Robert le Diable* (1831); *Les Huguenots* (Paris, 1836); *Le Prophète* (1849); *Pierre le Grand* (*L'Étoile du Nord*, 1854), *Le Pardon de Ploermel* (*Dinorah*, 1858); and *L'Africaine* (1865). In these Parisian operas he ceases to be an imitator of the Italians, and it is upon them that his fame as a composer is founded. Besides his operas Meyerbeer wrote a great number of songs, an oratorio, cantatas, a *Te Deum*, &c.

Meyrick, SIR SAMUEL RUSH, English archæologist, born in 1783, died 1848. He formed a finely arranged collection of mediæval armour, now in South Kensington Museum. His chief work is the beautifully illustrated *Critical Enquiry into Ancient Armour* (best ed. 3 vols. 1844).

Meze'reon (*Daphne Mezereum*), a well-known shrub grown in gardens, having fragrant pink flowers that appear in spring before the leaves, and are followed by red and poisonous berries. The bark is exceedingly acrid, and has been used in medicine. See *Daphne*.

Mézières (mā-zyār), a town of France, capital of department Ardennes, on the right bank of the Meuse, 120 miles north-east of Paris. It is a fortress of the second class. Pop. 4682.

Mezzanine (met'za-nēn), in architecture, a story of small height introduced between two higher ones; an entresol.

Mezzofanti (met-zo-fān'tē), GIUSEPPE, cardinal, distinguished for his knowledge

of languages, was born in 1771, at Bologna, and died at Naples in 1849. He succeeded Mai as keeper of the Vatican Library. Towards the end of his life he is said to have understood and spoken fifty-eight languages, but he rendered no valuable services to learning.

Mezzotint (It. *mezzo*, middle, half, and *tinto*, tint), a particular manner of engraving on copper or steel in imitation of painting in Indian ink, the lights and gradations being scraped and burnished out of a prepared dark ground. The surface of the plate is first completely covered with minute incisions, so that it would give in this condition a uniform black impression. The design is then drawn on the face, and the dents are erased from the parts where the lights of the piece are to be, the parts which are to represent shades being left untouched or partially scraped according to the depth of tone.

Mhow, or Mow, a town and British cantonment, Hindustan, Holkar's Dominions, 13 miles south-west of Indor. It was one of the centres of the Sepoy mutiny of 1857.

Miako. See *Kioto*.

Miami (mi-â'mi), a river of the United States, in Ohio, joining the Ohio below Cincinnati; length 150 miles.

Miani, or MEANEE, a village of India, situated on a branch of the Indus, 6 miles north of Haidarabad, the scene of a battle fought on 17th February, 1843, in which Sir Charles Napier defeated the Ameers of Sind.

Miasma, pl. MIASMATA. See *Malaria*.

Miautse, a race of people found in the provinces of Yunnan, Kweichow, Kwang-tse, and Kwang-tung in China. They are one of the aboriginal tribes of the country.

Mica, a mineral of a foliated structure, consisting of thin flexible laminae or scales, having a shining, pearly, and almost metallic lustre. These are sometimes parallel, sometimes interwoven, sometimes wavy or undulated, sometimes representing filaments. The laminae of mica are easily separated, and are sometimes not more than the 300,000th part of an inch in thickness. The plates are sometimes as large as 18 inches diameter. They are employed in Russia for window panes, and in that state are called *muscovy-glass*. Mica enters into the composition of the crystalline rocks, as granite, gneiss, mica schists, chlorites, talcose rocks, and occurs in trappean and volcanic products. It is found also in many sedi-

mentary rocks, as shales and sandstones, giving them their laminated texture. In the latter case, it is derived from the disintegration of the crystalline rocks. It is essentially a silicate of alumina, with which are variously combined small proportions of the silicates of potash, soda, lithia, oxide of iron, oxide of manganese, &c., in accordance with which several species have been constituted, as *common* or *potash mica*, *lithia mica*, *magnesia mica*, *pearl mica*. Regarded as minerals, varieties of mica have received the names of biotite, lepidolite, muscovite, lepidomelane, steatite, &c.

Micaceous Rocks, rocks of which mica is the chief ingredient, as mica slate and clay-slate.

Micah, the sixth of the minor prophets, a member of the tribe of Judah. He prophesied in the reigns of Jotham, Ahaz, and Hezekiah, and was a contemporary of Isaiah. His style is pure and correct, his images bold and vivid.

Mica Schist, **Mica Slate**, a metamorphic rock, composed of mica and quartz; it is highly fissile and passes by insensible gradations into clay-slate.

Michael, St. (Hebrew, 'he who is equal to God'), in Jewish theosophy, the greatest of the angels (Daniel x. 13, 21; xii. 1), one of the seven archangels. In the New Testament he is spoken of as the guardian angel of the church (Jude, ver. 9; Rev. xii. 7). There is a festival of St. Michael and All Angels in the Western Church, held on 29th September. (See *Michaelmas*.)—The order of St. Michael and St. George is a British order of knighthood dating from 1818. It consists of Knights Grand Cross (G.C.M.G.), Knights Commanders (K.C.M.G.), and Companions (C.M.G.). The ribbon of the order is blue with a red stripe down the centre. The badge is a white star of seven double rays, having in the centre a representation of St. Michael overcoming Satan. The motto is *Auspicium melioris avi*.

Michael, St. or SÃO MIGUEL, the largest of the Azores, famous for the production of oranges and lemons, of which it exports 120,000 boxes annually. The population is about 115,000; capital, Ponta Delgado.

Michael Angelo. See *Buonarrotti*.

Michaelis (mi-hä-ä'lis), JOHN DAVID, a German theologian and orientalist, born 1717, died 1791. He was professor of philosophy in the University of Göttingen from 1745 till his death. His labours in biblical criticism and history are of great value.

His principal works are *Mosaisches Recht* (translated into English, under the title of *Commentaries on the Laws of Moses*); *Introductions to the Study of the Old and New Testaments* (the latter has been translated by Marsh); *Spicilegium Geogr. Hebræorum*; *Translations of the Old and New Testaments*; and grammatical and lexicographical productions.

Michaelmas, the feast of St. Michael the Archangel (see *Michael, St.*). It falls on the 29th of September, and is supposed to have been established towards the close of the 5th century. In England, Michaelmas is one of the regular terms for settling rents.

Michaelmas Daisy, a name applied to various perennial species of aster, which are common inhabitants of flower-borders, growing to the height of 2 feet, and blooming about Michaelmas.

Michaud (mi-shō), JOSEPH FRANÇOIS, a French historian and publicist, born in 1767, died in 1839. His principal works are *Histoire des Croisades*, *Bibliothèque des Croisades*, *Biographie Moderne*, and *Biographie Universelle* (originated 1811).

Michel (mi-shell), FRANCISQUE XAVIER, French antiquarian and miscellaneous writer, born at Lyons 1809, died at Paris 1887. He edited a large number of old MSS., and translated the works of several British poets. His best-known works are *Les Écossais en France*, et *Les Français en Écosse*, and *A Critical Inquiry into the Scottish Language*.

Michelet (mēsh-lā), JULES, a French historian and miscellaneous writer, was born in Paris 1798, and died 1874. In 1821 he was called to the chair of history in the Collège Rollin, where he was also professor of ancient languages and of philosophy till 1826. After the revolution of 1830 he was appointed chief of the historical section of the archives of France, and in 1838 became professor of history at the Collège de France. He lost all his offices at the *coup d'état* in 1851. His principal historical works are: *Histoire de France* (18 vols., 1833–66); *Histoire de la Révolution Française* (7 vols., 1847–53); *Histoire Romaine*; *Précis de l'Histoire Moderne*; *Précis de l'Histoire de France jusqu'à la Révolution*; *Origines du Droit Français*. Several of his works on social subjects deserve mention: *Des Jésuites* (1843), written in collaboration with Edgar Quinet; *Du Prêtre, de la Femme, et de la Famille* (1844); *Du Peuple* (1846). About 1856 he turned into another path,

and wrote and successively published works on natural history and philosophy.

Michigan City, La Porte co., Ind., on Lake Michigan, is largely engaged in lumber trade. Pop. 1890, 10,776.

Michigan (mish'i-gan), one of the north-central United States; area, 58,915 square miles. It consists of two separate peninsulas—one projecting eastward between Lakes Superior, Huron, and Michigan, and bounded inland by Wisconsin; the other projecting northward between Lakes Michigan, Huron, St. Clair, and Erie, and bounded on the south by Ohio and Indiana. It has upwards of 1100 miles of lake-coast, with numerous bays and excellent harbours. The north-western peninsula, occupying nearly a third of the whole surface, is comparatively elevated, and presents a succession of mountains and lakes, plains, rivers, and forests. The surface of the other peninsula is gently undulating, and rises gradually from the lakes towards its centre. It is mostly covered with fine forests of timber, interspersed with plains and prairies. Agriculture is the staple industry, the chief cereals being wheat and Indian corn. The remaining crops include barley, buckwheat, rye, hay, potatoes, tobacco, hops, &c. After agriculture, lumbering is perhaps the chief employment. The cultivation of fruit-trees is receiving increasing attention, and considerable quantities of apples and peaches are now exported. The mines in the north-western peninsula produce hæmatite ore, from which is obtained great quantities of excellent iron; and here also are seated very rich copper mines. Salt of unsurpassed purity occurs in a basin extending over 8000 square miles. Manufacturing industries are varied and important. The important commerce of the state is greatly benefited by its large navigable waters and by its extensive system of railways, which measure some 6400 miles. The capital is Lansing, but the commercial metropolis and much the largest city is Detroit, Grand Rapids being next in size. In the primary schools education is free, but a fee may be required for advanced studies in higher schools. At the head of the educational institutions is the Michigan University, situated at Ann Arbor. The first settlements in Michigan were made by the French. It was included in the territory surrendered by Britain to the United States after the revolutionary war. Michigan became a state of the Union in 1837, at

which date it had 174,647 inhabitants. Pop. in 1890, 2,093,889.

Michigan, LAKE, the second largest of the great lakes of North America. It is wholly within the United States, having the state of Michigan on the east and north-west, Wisconsin and Illinois on the west, and Indiana on the south. On the north-east it communicates with Lake Huron by the narrow strait of Mackinaw. It is 350 miles long, and on an average 60 miles broad; area, estimated at 26,000 sq. miles. The lake is 578 feet above sea-level; the greatest ascertained depth is about 1000 feet.

Michoacan', one of the states of Mexico, on the Pacific Coast; area, 23,714 sq. miles. It is to a large extent elevated and mountainous, among the mountains being the volcano of Jorullo. It has rich mines of gold, silver, and other minerals. Capital Morelia. Pop. 1890, 784,108.

Mickiewicz (mits-kyā'vich), ADAM, Polish poet; born 1798, died 1855. He wrote several epics, and is regarded as the chief national poet of his country.

Mickle, WILLIAM JULIUS, poet, born in Dumfriesshire in 1734, died 1788. At first he engaged in business as a brewer, but not succeeding he devoted himself to literature, and removed to London in 1764. In 1775 appeared his principal production, a translation of the *Lusiads* of Camoens. Among the best of Mickle's original productions is the ballad of Cumnor Hall, which suggested to Sir Walter Scott the subject of his novel of Kenilworth.

Micmacs, a tribe of North American Indians, mostly inhabiting New Brunswick and Nova Scotia, and numbering some 3600. Their language has been reduced to writing, and a dictionary of it has been compiled.

Microbes. See *Germ Theory*.

Micrometer, an instrument used with a telescope or microscope, for measuring very small distances. Micrometers are variously constructed; but in perhaps the most common form (the *filar micrometer*) the principle of operation is that the instrument moves a fine thread or wire parallel to itself in the plane of the image of an object, formed in the focus of a telescope, the wire or thread being moved by means of delicate screws with graduated heads, so that the distance traversed by the wire can be measured with the greatest precision. The micrometer is of the utmost value to

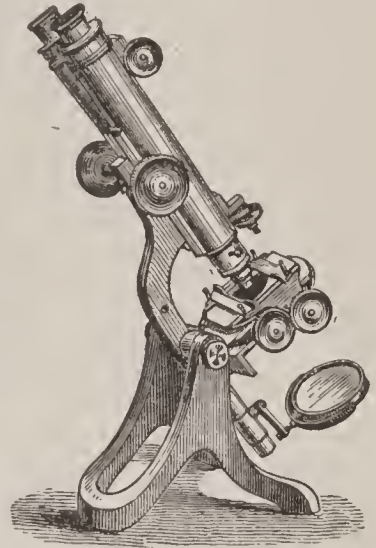
the astronomer, and in trigonometrical surveys, and military and naval operations.

Microphone, an instrument to make faint sounds more audible, invented by Mr. Hughes in 1878. The most sensitive conductor of sound is willow-charcoal, dipped when at white-heat into a bath of mercury. A piece of charcoal, thus prepared, placed vertically between two carbon-blocks which are connected with a telephone, is a common form of microphone, and magnifies sounds, otherwise inaudible, enormously.

Microscope, an optical instrument consisting of a lens or combination of lenses (in some cases mirrors also) which magnifies objects, and thus renders visible minute objects that cannot be seen by the naked eye, or enlarges the

apparent magnitude of small visible bodies, so as to enable us to examine their minute texture or structure. For a good microscope an achromatic combination of lenses to form an object-glass and a well-made eye-piece are necessary. The magnifying power of an instrument may be increased

by (1) increasing the magnifying power of the object-glass; (2) increasing the power of the eye-piece; (3) increasing the distance between the objective and the eye-piece. The single or simplest form of microscope is nothing more than a lens or sphere of any transparent substance, in the focus of which minute objects are placed. When a microscope consists of two or more lenses, one of which forms an enlarged image of objects, while the rest magnify that image, it is called a *compound microscope*. A *binocular microscope* is a microscope with two tubes starting from a point above the object-glass, which is single, and gradually diverging to fit the eyes of the observer. The rays of light arising from the object under observation are caused to diverge into the two tubes by a prism. A *solar microscope* has a reflector and a condenser connected with it, the former being employed to throw the sun's rays on the latter, by which it is condensed to illu-



Binocular Microscope.

minate the object placed in its focus. A *lucernal microscope* is the same in principle as the solar, except that a lamp is used, instead of the sun, to illuminate the object. When an oxyhydrogen lime-light is used it is called an *oxyhydrogen microscope*.

Microtasim'eter, an instrument for measuring extremely small variations in the expansion or contraction caused by heat, moisture, &c. It has been used by astronomers to indicate the altered radiation of heat from the sun during an eclipse or when the atmosphere is filled with moisture.

Midas, in Greek mythology, king of Phrygia, whose request that whatsoever he touched should turn to gold was granted by the god Dionysus (Bacchus). In this way even his food became gold, and it was not until he had bathed in the Pactolus that the fatal gift was transferred to the river. Another legend is that, in a musical contest between Pan and Apollo, Midas, who was umpire, decided in favour of the former; whereupon the angry Apollo bestowed upon the presumptuous critic a pair of ass's ears.

Middelburg, a town of Holland, capital of the province of Zeeland, near the middle of the island of Walcheren; a well-built and remarkably clean town. It is an ancient place, and was taken by the Dutch from the Spaniards in 1574. Pop. 16,340.

Middle Ages, a term applied loosely to that period in European history which lies between the ancient and modern civilizations. With some writers the period began when the western Roman Empire was overthrown by Odoacer in 476; with others when Charlemagne was crowned emperor of the West in 800; while yet others make it begin when the Frankish Empire ended in 843. The end of the period is variously conceived to have closed with the Reformation in Germany; with the discovery of America by Columbus; with the invention of printing; and with the end of the Thirty Years' war in the Peace of Westphalia (1648). The outstanding political events of the Middle Ages include the rise of the German, French, and Italian nationalities; the rise of the Norman power, and the conquest of England by William of Normandy; the crusades; and the establishment of the Holy Roman (or German) Empire. The feudal system and the power of the papal hierarchy were widespread.

Middlesborough, Plymouth co., Mass., 34 m. S. by E. of Boston, has large manufacturing interests. Pop. 1890, 6065.

Middlesborough, a river port and municipal and parliamentary borough of England, in the North Riding of Yorkshire, 6 miles from the mouth of the Tees and 44 miles north of York. In 1829 the site of Middlesborough was occupied by a solitary farmhouse. Its rapid growth has been due to its suitability as a port for the Durham coal-fields, and to the smelting of the iron ore abounding in the adjacent Cleveland Hills, an industry begun in 1840, and especially associated with the names of Bolckow and Vaughan. There are numerous blast-furnaces and rolling-mills, foundries, engineering works, ship-yards, nail-works, bolt and nut works, &c. Salt is being extensively worked also, there being a thick bed of rock-salt at a depth of 1300 feet. The streets are well laid out, and there are the usual institutions of a modern and progressive town. The docks are extensive and commodious. The borough was incorporated in 1853, and returns one member to parliament. Pop. 1891, 75,516.

Middlesex, the metropolitan county of England, one of the smallest in the kingdom, but among the most important, from its containing the greater portion of the city of London; area, 181,317 acres. The surface is flat, except the slight eminences, Hampstead, Highgate, and Harrow-on-the-Hill, on the north side of London. The chief river is the Thames, forming the southern boundary. The soil is mostly gravelly, and not naturally fertile, but enriched in the vicinity of London by a profuse application of manure. Middlesex is divided into 7 parliamentary divisions, each returning one member. Pop. 3,251,703.

Middle Temple. See *Inns of Court*.

Middleton, a town of England, in Lancashire, 6 miles N. of Manchester and 3½ miles W. of Oldham. Extensive cotton, silk, and other works employ a large proportion of the inhabitants. Pop. 18,953.

Middleton, CONYERS, D.D., English writer, born 1683, died 1750. He became a student, and in 1706 a fellow of Trinity College, Cambridge. He is best known as the author of a *Life of Cicero* (1741), and a *Free Inquiry into the Miraculous*, the latter causing its author to be regarded as an infidel.

Middleton, THOMAS, English dramatist, born about 1570, died 1627. Little is known of his life except that he lived in London, and was employed to write court masques and pageants while he held the office of city chronologer. He wrote the comedies

of *A Trick to Catch the Old One*, *The Family of Love*, *The Phoenix*, *Michaelmas Term*, *A Mad World my Masters*, and *The Witch*, which is supposed to have suggested some of the witch scenes in *Macbeth*. He was also associated with Rowley in the production of *The Fair Quarrel* and *The Changeling*, while he wrote *The Widow* along with Fletcher and Jonson.

Middletown, a town of Connecticut, United States, on the Connecticut River, 24 miles north-east of New Haven. Pop. 9013.

Middletown, Orange co., N. Y., at intersection of several railroads. Pop. 1890, 11,977.

Middletown, Butler co., Ohio, a manufacturing town. Pop. 1890, 7681.

Middletown, Dauphin co., Pa., 9 m. s. of Harrisburg; has furnaces, car-works, saw-mills, &c. Pop. 1890, 5080.

Midgard, in Scandinavian mythology, the abode of the human race, formed out of the eyebrows of Ymir, one of the first giants, and joined to Asgard, or the abode of the gods, by the rainbow-bridge.

Midge, the ordinary English name given to numerous minute species of flies, resembling the common gnat. The eggs are deposited in water, where they undergo metamorphosis.

Midhat Pasha, a Turkish statesman, born 1822, died 1884. He was educated in Constantinople; entered the Turkish civil service; attracted attention by his administrative capacity; became governor of Bulgaria in 1862, and was ultimately in 1876 created grand vizier. In this position he was supreme in the palace, and caused Abdul Aziz and Murad V. to be deposed. In the following year, however, he was himself banished; and in 1881, after a judicial investigation into the murder of Abdul Aziz, he was condemned and exiled to Arabia, where he died.

Midhurst, a very ancient town of Sussex, England, situated on the right bank of the Rother, 46 miles south-west of London. It was a parliamentary borough up to 1885. Pop. 7221.

Midianites, an Arabian tribe, represented in the Old Testament as the descendants of Midian, son of Abraham by Keturah (Gen. xxv. 2), and described as engaged at an early period in a commerce with Egypt. They dwelt in the land of Moab (Arabia Petræa), to the south-east of Canaan. One portion of them inhabited the country on the east of the Dead Sea.

Midleton, a market town of Ireland, co. Cork, 16 miles east of Cork. Pop. 3358.

Midnapur, an administrative district of Bengal, forming the most southern part of the Bardwán division, bounded on the east by the river Hooghly, and with an area of 5082 square miles. Pop. 2,517,802.

Midrash is the general name given among the Jews to the exposition of the hidden meaning of the Scriptures. It includes any and every ancient exposition on the law, psalms, and prophets.

Midshipman, a petty officer in the royal navy, occupying the highest rank among the petty officers. No person can be appointed a midshipman till he has served at least one year as a cadet, and passed his examinations. After six years' service in all, and passing further examinations, the midshipman is promoted to the rank of sub-lieutenant. The midshipman's time is principally occupied in receiving instruction, both literary and professional, and his special duties are to pass the orders of the captain and superior officers to the seamen. There is a similar class with the same name in the U.S. navy.

Midsummer Day is the feast-day of the nativity of St. John the Baptist, and is commonly reckoned the 24th of June. On midsummer eve, or the eve of the feast of St. John, it was the custom in former times to kindle fires (called St. John's fires) upon hills in celebration of the summer solstice. It is also the second quarter-day in England for the payment of rent.

Midwifery, a branch of medicine or surgery, also called obstetrics, being the art of aiding and facilitating childbirth, and of providing for the preservation of the health and life of the mother during and after her delivery.

Mieris (mē'ris), FRANS VAN, Dutch genre painter, born at Leyden 1635, died 1681. He was a favourite pupil of Gerard Dow. He preferred subjects from the life of the higher classes, excelled in painting rich stuffs, plate, and jewels, his colouring being at once clear and delicate, deep and rich. His pictures, usually of small size, bring enormous prices, and are found in all the chief galleries.—FRANS VAN MIERIS the younger, son of Willem Van Mieris, born at Leyden 1689, died 1763; painted genre pictures and portraits, and published works on numismatics and history.—JAN VAN MIERIS, son of Frans the elder, born 1660, died 1690; painted portraits and historical pictures. His works

are rare.—WILLEM VAN MIERIS, son and pupil of Frans the elder, born 1662, died 1747. He painted genre and mythological pictures, his best work representing subjects taken from ordinary life. His Poulterer's Shop is in the National Gallery, London, and many of his more important works are preserved at Dresden and other continental galleries.

Mignonette (min'yōn-et; *Resēda odorāta*), a well-known fragrant annual plant of the natural order Resedaceæ, a native of Egypt. It is largely cultivated in flower-plots, in apartments, and in the boxes which are placed outside windows. A sub-biennial variety, called *tree mignonette*, rather more odorous than the common sort, is well suited for the drawing-room.

Migration of Animals, the phenomenon of certain animals moving, either periodically or at irregular times and seasons, from one locality or region to another, sometimes far distant. Migration has been observed in mammals, birds, fishes, and insects, but it probably occurs in other groups of the animal world, the observation of which is less easy than that of the higher forms. The buffaloes or bison of North America used, it would seem, to migrate in herds from one place to another. Many fishes (for example salmon, lampreys, &c.) make periodical journeys from the sea towards fresh-water streams and rivers for the purpose of depositing their eggs. The migratory habits of locusts, and those of certain species of ants, &c., exemplify migration among insects; but amongst the birds we meet with the best-marked instances of migration. With sea-birds (for example, puffins), the day of arrival or that on which they appear in certain localities may be prognosticated with perfect safety; and similarly, the day of departure appears in some birds (for example, swifts) to be almost as accurately timed. Storks have been known to return regularly to their old nests, and the same has been observed of swallows. The mode in which birds migrate varies greatly even in the same species of bird. The swallows migrate in bodies comprising vast numbers, and so also do cranes, wild ducks, geese, and many other forms. The migratory flight is generally made against the wind; and certain species of birds, as quails for instance, appear to wait for favouring winds, and to delay their flight by resting on islands when the wind is unfavourable. Regarding the causes of migration, science cannot at present definitely pro-

nounce. Probably a combination of causes, or different causes in different cases, as scarcity or plenty of food-supply, the powerful influences of temperature, and the influence of the breeding-season, may contribute to the migratory 'instinct.' It has been further suggested by Mr. A. R. Wallace, that this migratory habit or instinct has gradually been acquired since a time when the breeding and feeding grounds of the animals were coincident, these having been gradually separated by climatic and geological changes.

Mihrab (mih'rāb), an ornamented recess or alcove in a mosque, near the mimbar or pulpit. The people pray in front of the mihrab, which always marks the direction of Mecca.

Mikado (mi-kä'dō), the emperor of Japan, the spiritual as well as temporal head of the empire. See *Japan*.

Miknas. See *Mequinez*.

Mil'an (Italian, *Milano*; German, *Mai-land*; Latin, *Mediolānum*), a city of Northern Italy, capital of the province of its own name, situated on the small river Olona, in the middle of the Lombard plain between the Adda and Ticino. The town is built in the form of an irregular polygon, and is partly surrounded by a wall or rampart, outside of which runs a fine road shaded by chestnut-trees. The city is entered by eleven gates, several of which are magnificent, and the leading streets proceeding from these gates are tolerably wide, well paved, and lighted. The chief open space is the Piazza d'Armi (Place of Arms), part of which has been made into an amphitheatre capable of containing 30,000 spectators. The castle, now a barrack, fronts the Piazza d'Armi on one side; at the opposite side is the Porta Sempione with the fine Arco Sempione or Arco della Pace, built of white marble. The Piazza del Duomo, in front of the cathedral, is the centre of the traffic of Milan. Among the public edifices the first place belongs to the Duomo or cathedral, a magnificent structure, inferior only in size to St. Peter's at Rome and the cathedral of Seville. It is built of brick faced with white marble, and is 477 ft. in length, 183 ft. in width, nave 155 ft. high, cupola 220 ft., tower 360 ft. The prevailing style is Gothic; in form it is a Latin cross; it is ornamented with turrets, pinnacles, and 2000 statues; and the roof is of white marble. It was begun in 1386, and was only completed in 1805. There are many other fine edifices, among them being the Palazzo di

Brera or Delle Scienze Lettere ed Arte, containing the picture-gallery and the library of the academy (200,000 vols.); and the Ambrosian Library, the earliest, and still one of the most valuable public libraries in Europe. The chief theatre is La Scala, accommodating 3600 spectators. The manufactures include silks, cottons, lace, carpets, hats, earthenware, jewelry, &c.—The first distinct notice of Milan occurs B.C. 221, when it was subdued by the Romans. In the 3d century after Christ it ranked next to Rome. It became a republic in 1101, and having refused to submit to the Emperor Frederick I., it was destroyed by him in 1162. It was soon rebuilt, but long continued to be torn by internal factions, headed by the leading nobility, among whom the Visconti and the Sforzas were the most prominent. Latterly it belonged with Lombardy to Austria, until 1859, when by the Peace of Villafranca Lombardy was ceded to Piedmont. Pop., including suburbs, 1890, 414,551.

Milazzo (mi-lăt'zō), a seaport in Sicily, about 27 miles west of Messina. Here Garibaldi defeated the Neapolitan troops in his Sicilian campaign of 1860. Pop. 7970.

Mildew, a name given to various minute parasitic fungi producing a state of disease or decay in living and dead vegetable matter, and in some manufactured products of vegetable matter, such as cloth and paper. Numerous cultivated crops, fruit-trees, &c., suffer from mildew.

Mile, a measure of length or distance, and used as an itinerary measure in almost all countries of Europe. The English statute mile contains 8 furlongs, each 40 poles

or perches, of $5\frac{1}{2}$ yards. The statute mile is therefore 1760 yards, or 5280 feet. It is also 80 surveying chains, of 22 yards each. The square mile is 6400 square chains, or 640 acres. The Roman mile was 1000 paces, each 5 feet; and a Roman foot being equal to 11.62 modern English inches, it follows that the ancient Roman mile was equal to 1614 English yards, or very nearly

$\frac{1}{12}$ ths of an English statute mile. The ancient Scottish mile was 1984 yards = 1.127 English miles; the Irish mile, 2240 yards = 1.273 English miles; the German short mile is 3.897 English miles, the German long mile 5.753. The geographical or nautical mile is the sixtieth part of a degree of latitude, or 2028 yards nearly.

Milesians, a name sometimes given to natives of Ireland, a portion of whose inhabitants, according to Irish tradition or legend, are descended from *Milesius*, a fabulous king of Spain, whose two sons conquered the island 1300

years before Christ, establishing a new nobility.

Milesian Tales. See *Novel*.

Mile'tus, an ancient city of Ionia (Asia Minor), situated near the mouth of the Meander, one of the chief Greek cities of Asia Minor, birthplace of Thales, Anaximander, &c. It had upwards of seventy-five colonies, most of which were on the coasts of the Euxine. The most flourishing period was before its destruction by the Persians 494 B.C., though it again rose to be a place of some importance.

Milfoil, the common name of *Achillea millefolium*, nat. order Compositæ, a plant which grows commonly on banks, by road sides, and on dry pastures. It has numerous



Milan—The Cathedral, from the Corso Vittoria Emanuele.

MILFORD—MILITIA.

very finely divided leaves, and corymbs of small, white, or sometimes rose-coloured flowers. The plant has highly astringent properties.

Milford, or **MILFORD HAVEN**, a seaport in the county of Pembroke, Wales, on the north shore of the inlet called Milford Haven. There are docks capable of accommodating the largest vessels, and Milford has recently become a port for transatlantic

steamers. Milford belongs to the Pembroke district of parliamentary boroughs. Pop. 3813.—The inlet called **MILFORD HAVEN**, one of the most capacious natural harbours in Britain, is a deep indentation in the south-west coast of Pembroke, stretching about 10 miles from east to west, with a breadth of from 1 mile to 2 miles, and branching off into numerous bays, creeks, and roads.

Milford, Worcester co., Mass., 32 m. s. w.



of Boston, is one of the largest boat-building centres in the U. S. Pop. 1890, 8780.

Military Schools may be divided into two classes—regimental schools, which give training in the ordinary branches of education to soldiers and their children; and schools which are intended to prepare pupils for the duties of military service. The Royal Academy at Woolwich gives instruction in the special duties of the artillery and engineer branch of the service; the College at Sandhurst for infantry and cavalry; and the Greenwich Naval College for marine artillery. Schools for practical instruction to officers and men are also established: for gunnery, at Shoeburyness; for military engineering, at Chatham; for musketry, at Hythe; for army surgeons, at Netley; and there are also establishments for the education of officers of the regular army and of

the auxiliary forces in the advanced branches of their profession in all the large garrison towns of the United Kingdom. Similar institutions exist in all European countries, in the United States (the Military Academy, West Point), and in Canada, where there is a military college at Kingston, and eight military schools in the different provinces.

Militia, a body of armed citizens regularly trained, though not in constant service in time of peace. A militia is also distinguished from volunteers, in consisting of local corps raised by requisition of the state. The militia of Britain used to be drawn by lot for five years, and officered by the lords-lieutenant of the counties and those appointed by them. At present the militia is composed of voluntary recruits, though the ballot can still be enforced; but by the

Army Regulation Act of 1871 the jurisdiction of the lords-lieutenant has been vested immediately in the crown. The contingent of each county is prescribed by statute. The preliminary training period of the militia is six months (usually limited to about two), and afterwards there is a yearly training not exceeding fifty-six days (generally twenty-eight). Each man enlists for six years, at the expiry of which time he may be re-enlisted for a like period. When called out both officers and men are liable to duty with the regulars; but the area of service does not extend beyond the United Kingdom. In Canada the militia consists of all British male subjects between the ages of eighteen and sixty, divided into an active and a reserved force. The militia of the United States consists of volunteer organizations and all able-bodied male citizens of the age of eighteen and under forty-five, with certain exceptions provided by the national and state laws. See the articles on the different countries.

Milk, the secretion peculiar to the females of the class Mammalia, which is secreted in the mammary glands, and which is employed as the nutritive fluid of the young mammal after its birth. Examined by aid of the microscope, milk is seen to consist of a clear fluid, containing many globules, the average size of which is about $\frac{1}{10000}$ of an inch in diameter, and each appears to consist of oily matter invested by a thin layer of albumin. When churned, the globules in the milk are forced together *en masse*, and form butter. The cream of milk is formed by the globules rising to the top of the milk without coalescing; the 'skim'-milk, or that left after the cream is formed, being of a pale bluish colour, owing to its being deprived of its fatty or oily particles. In itself, milk exhibits the type of a perfect food. The *casein* of milk represents the albuminous or flesh constituents of food; the butter supplies the fatty or oleaginous parts; the water exists as such in milk, whilst it contains the saccharine constituents in the form of milk-sugar, and the inorganic parts in the form of phosphates of lime and alkaline chlorides, so necessary for the production of bone. The milk of every animal has certain peculiarities which distinguish it from all other milk, but the general properties are the same in all. The specific gravity of milk varies from 1.03 to 1.04. In the making of butter, cream is allowed to stand for some time, during which an

acid is generated. It is then put into a churn and agitated, when the butter gradually separates. The *butter-milk*, or that left after the separation of the butter by churning, contains the casein, sugar, &c., of the milk; and the milk left after creaming also contains the greater part of the casein and milk-sugar. Milk may be coagulated by various substances, but *rennet* prepared from the fourth stomach of the calf is generally used for domestic purposes. The result of coagulation is to separate the milk into a thin fluid, or *whey*, and a thick whitish deposit, the *curd*. (See *Butter*, *Cheese*.) Whey has a pleasant taste, and contains a large quantity of the milk-sugar, hence it is frequently used as drink, and from its nutritious quality it is administered to delicate people. It is also sometimes made to undergo fermentation, by which a very weak spirituous fluid is obtained. (See *Koumiss*.) By act of parliament milk is not permitted to be sold which does not contain a fair amount of the proper nutritive constituents. It has been held that even milk wholly derived from the cow, if below the standard at which with proper feeding cow milk can reasonably be maintained, is adulterated within the meaning of the act, but no exact standard of purity has been established. Condensed milk (which see) is now largely used, and consists of ordinary milk which has undergone a process of evaporation and been mixed with sugar. Milk is very liable to be infected with the germs of disease, either from disease in the cow, contamination from unhealthy persons, or the use of infected water in cleaning vessels; and many epidemics of zymotic disease have been traced to impure milk.

Milk-fever, a febrile state sometimes induced in women when the milk begins to be secreted after parturition. It is accompanied with severe pains and throbbing in the head, flushing in the face, thirst, heat and dryness of skin. The pulse is full, the tongue furred, bowels costive, urine scanty, and light and sound are painful. The treatment consists in cooling saline purgatives, good ventilation and moderate temperature in apartments, and encouraging the free flow of milk. Milk-fever attacks the lower animals, and in cows it is best prevented by unstimulating diet, and by milking the cow regularly ten days before calving.

Milk-plant. See *Jew-bush*.

Milk-snake, the *Ophiobolus eximius*, a harmless snake of the United States.

Milk-tree. See *Cow-trees*.

Milk-weed, a name for plants of the genus *Asclepias*.

Milkwort, a pretty plant, *Polygala vulgaris*, order Polygalaceæ, abounding in a milky juice, and believed by the ignorant to promote the flow of milk in the breasts of nurses.

Milky-way. See *Galaxy*.

Mill, originally, a machine for grinding and reducing grain or other substance to fine particles; now applied also to machines for grinding or polishing by circular motion, and especially to complicated machinery for working up raw material and transforming it into a condition in which it is fit for immediate use or for employment in a further stage of manufacture. In the first sense of the word we have *flour-mills* and *meal-mills*, *cider-mills*, *coffee-mills*; in the second sense we speak of a *lapidary's mill*; and in the third sense we speak of *cotton-mills*, *spinning-mills*, *weaving-mills*, *oil-mills*, *saw-mills*, *bark-mills*, *fulling-mills*, &c. The word commonly includes the building for the special accommodation of the machinery, as well as the machinery itself. The oldest kind of flour or meal mill was the hand-mill or *quern* (which see). See also *Grinding*.

Mill, JAMES, born at Logie Pert, Forfarshire, Scotland, 1773, died 1836. He was educated at the grammar-school of Montrose and the University of Edinburgh; received license as a preacher, but abandoned this profession as the result of a change in his theological opinions; accompanied Sir John Stuart to London and became tutor in his family; edited the *Literary Journal*, and contributed articles to the *Edinburgh*, *British*, *Eclectic*, and *Monthly Reviews*; began his *History of British India* in 1806 and published it in 1817-18. In consequence of the knowledge which his researches had given him of Indian affairs, he was appointed assistant-examiner of correspondence by the East India Company, and soon afterwards became chief-examiner. He was a large contributor to the *Westminster Review*; wrote articles on social and political subjects for the *Encyclopedia Britannica*; published a treatise on the *Elements of Political Economy* (1821-22), and an able *Analysis of the Phenomena of the Human Mind* (1829), &c.

Mill, JOHN STUART, son of James Mill, was born in London 1806, died at Avignon 1873. He was trained under the immediate influence of his father, and at the age of

three began to learn the Greek alphabet, while at eight he was studying Herodotus, Xenophon, and Plato, and entering upon a course of Latin, Euclid, and algebra. At the age of fourteen he entered upon a course of political economy, and thereafter this strenuous education of the boy ceased—so far, at least, as the strict surveillance of his father was concerned. It left a deep influence, however, upon his subsequent life and labours. His fifteenth year was spent in France; on his return he studied law for a time, and in 1823 he obtained a clerkship in the East India House, remaining in the Company's employment till it was supplanted by the crown in 1858. In 1823 the *Westminster Review* was begun by the followers of Bentham, and young Mill was one of its earliest contributors, while from 1835 to 1840 he was its principal conductor. In his twenty-first year he edited Bentham's work *On Evidence*. In 1843 appeared the first of his two chief works, *A System of Logic, Ratiocinative and Inductive*, the second being *Principles of Political Economy*, 1848. To these he afterwards added his work *On Liberty*, 1859; *Thoughts on Parliamentary Reform*, 1861; *Utilitarianism*, 1862; the *Examination of Sir William Hamilton's Philosophy*, and a *Study of Auguste Comte and Positivism*, 1865. In this last year he was returned to parliament as member for Westminster, where he advocated a measure to admit women to the suffrage, took part in the Reform Bill debates, &c. At the election of 1868 he was defeated and retired to Avignon. Besides the works already mentioned he published *Considerations on Representative Government*, 1861; *The Subjection of Women*, 1869; and *The Irish Land Question*, 1870. His *Autobiography* was published in 1873, and the three essays, *Nature*, *The Utility of Religion*, and *Theism*, in 1874. Mill's works on logic and political economy are standard text-books. In the former he placed the system of inductive logic on a firm basis. See *Logic*.

Millais (mil'ās), SIR JOHN EVERETT, BART., R.A., born at Southampton 1829; gained his first medal for drawing when nine years old; became a student at the Royal Academy; exhibited his first picture, *Pizarro seizing the Inca of Peru*, in 1846; and received the gold medal for an historical painting, *The Tribe of Benjamin seizing the Daughters of Shiloh*, in 1848. In his earlier days he was a leader of the Pre-Raphaelite School, but on attaining maturity in art he abandoned

the peculiarities for which that school is noted. As the result of this new departure Millais painted such pictures as Ferdinand Lured by Ariel, Mariana in the Moated Grange, The Huguenot Lovers, The Black Brunswicker, and Ophelia, while its influence was also apparent in his landscapes of Chill October, The Fringe of the Moor, &c.



Sir John E. Millais, R.A.

Among his later works are, The North-West Passage, The Princes in the Tower, Effie Deans, Cinderella, and Mercy—St. Bartholomew's Day, 1572. In portraiture he holds the foremost rank, and has painted a number of the most distinguished men of the day. He was made a baronet in 1885, and has been decorated with the Legion of Honour. Many of the works of Millais are well known by engravings.

Millau (mē-yō), a town of Southern France, department of Aveyron, 31 miles south-east of Rodez. It has coal-mines, manufactures of leather, leather gloves, silk-mills, &c. Pop. 14,417.

Milledgeville (mil'ej-vil), a town of the United States, state of Georgia, formerly capital of the state, 145 miles north-west of Savannah, on the Oconee. Pop. 3794.

Millen'num, an aggregate of a thousand years: a word used to denote the thousand years mentioned in Rev. xx. 1-5, during which period Satan will be bound and restrained from seducing men to sin, and during which, millenarians believe, Christ will reign on earth with his saints. The near approach of the millennium has been often foretold.

Millepede (L. *mille*, a thousand, *pes*, *pedis*,

a foot), a name common to animals resembling centipedes, of the order Myriapoda, from the number of their feet. The most common is the *Iulus sabulosus*, about 1½ inch long. The young when hatched have only three pairs of legs, the remainder being gradually acquired till the number is complete, which is usually about 120 pairs.

Millepora, **Millepor'idæ**, a genus and family of reef-building branching corals.

Miller, HUGH, geologist, was born at Cromarty in 1802, and became a stone-mason. While working at his trade he studied literature, wrote a great deal, and in particular became a proficient in geology. His first publication appeared in 1829, under the title of Poems Written in the Leisure Hours of a Journeyman Mason, and this was followed in 1835 by the prose volume of Scenes and Legends of Cromarty. He was then appointed to a post in a bank at Cromarty, and while employed in this capacity took an active part in the religious controversy that ended in the Disruption (which see). In 1840 he went to Edinburgh as editor of the Witness newspaper, after 1843 the chief organ of the Free Church. In this paper he printed the work subsequently published under the title of The Old Red Sandstone, which attracted the immediate attention of the scientific world and established his reputation as a geologist. This was followed by First Impressions of England and its People; Footsteps of the Creator; My Schools and Schoolmasters, a charming account of his earlier life; and The Testimony of the Rocks, in which he tried to reconcile the Mosaic account of creation with the teachings of geology. Having just finished this latter work, his brain collapsed from over-pressure, and he died by a pistol-shot from his own hand at Portobello in 1856. His Schools and Schoolmasters was supplemented by the Life and Letters, published in 1871. Besides the volumes already mentioned, his collected works include Essays Historical and Critical; The Cruise of the Betsy; Rambles of a Geologist; Tales and Sketches; Edinburgh and its Neighbourhood; and The Headship of Christ.

Miller, JOAQUIN, the pen-name of Cincinnati Heine Miller, born 1841 in Indiana; spent some time in the Californian mining districts; lived with the Modoc Indians for five years; edited a newspaper called the Democratic Register; studied law and was called to the bar in Oregon, and became district judge in Canyon city, subsequently

settled in New York. He has written *Pacific Poems* (1873), *Songs of the Sierras* (1873), *Songs of the Sun Lands* (1873), *Ship in the Desert* (1875), besides novels and dramas.

Miller, JOSEPH, better known as **JOE MILLER**, was born in 1684, it is supposed in London, and was a favourite low comedian. He died in 1738. The jests which have immortalized his name were collected in 1738, by John Mottley, author of the life of Peter the Great, and other works.

Miller, PATRICK, born at Dalswinton, Scotland, 1730; died 1815. He patronized Burns, and as early as 1785 made experiments in steam navigation.

Miller, WILLIAM, line engraver, born at Edinburgh 1796, died there 1882. He studied engraving at Edinburgh and also under George Cooke in London, after which he settled down at Edinburgh. His work was much appreciated by Turner, and he engraved many plates after that master. Of these the most important are, *The Bass Rock in a Storm* (1826); *Great Yarmouth* (1829); *The Grand Canal, Venice* (1837); *Modern Italy* (1839); *The Bell Rock Lighthouse in a Storm* (1864); *St. Michael's Mount* (1866). He also engraved important figure subjects after George Harvey, R.S.A., and landscapes after Horatio M'Culloch. In perfectness of tone, and in expressing by line stormy skies and the fluid quality of water, stormy seas, and still rivers—his work is exceptionally excellent.

Miller's Thumb. See *Bullhead*.

Millet, a common name for various species of cereals yielding abundance of small seeds, more particularly *Panicum miliaceum* and *P. miliare*, cultivated in the East Indies, China, Arabia, Syria, Egypt, &c., where it is used as human food. The leaves and panicles are given both green and dried as fodder to cattle. *German millet* (*Setaria germanica*) is cultivated on account of its seeds, which are used as food for cage-birds. *Italian millet* (*Setaria italica*) is a closely allied species. For other grains known as millet, see *Dhurra* and *Dukhn*.

Millet (mi-lā), **JEAN FRANÇOIS**, French artist, born at Gruchy, near Cherbourg, in 1814, died in 1875. He worked with his peasant father in the fields; studied drawing at the academy of Cherbourg; from thence passed with an allowance from this town to the atelier of Delaroche in Paris, and exhibited at the Salon in 1840. As a student and until the death of his first wife in

1844 he was frequently in the greatest poverty, and his life subsequently was by no means free from difficulty. In 1849 he left Paris and settled among the peasants of Barbizon, on the edge of Fontainebleau Forest, and devoted himself to transferring their simple everyday life to his canvases, which he did with great truth of sentiment and subdued poetic charm. Of his paintings may be mentioned *The Sheep-shearers*, *The Gleaners*, *The Sower*, *The Shepherdess with her Flock*, and *The Angelus*. The last was sold by auction in Paris in 1889 for about \$115,000.

Milligramme, in the system of French weights and measures, the thousandth part of a gramme, or '0154 of an English grain.

Millimetre, a French lineal measure containing the thousandth part of a metre; equal to '03937 of an inch.

Millville, Cumberland co., N. J., manuf. cottons, window-glass and glass-ware, iron, &c. Pop. 1890, 10,002.

Milman, HENRY HART, D.D., born in London 1791, died 1868. He was educated at Dr. Burney's Academy, Greenwich, at Eton and at Oxford. In 1812 he received the Newdegate prize for an English poem on the Apollo Belvidere; published *Fazio*, a tragedy, which was performed at Covent Garden Theatre; and in 1815 was appointed vicar of St. Mary's, Reading. He delivered the Bampton lectures in 1827; became professor of poetry at Oxford 1821-31; appointed rector of St. Margaret's, Westminster, in 1835, and dean of St. Paul's in 1849. His principal works are: *Samor*, a legendary poem (1818); *The Fall of Jerusalem* (1820); *The Martyr of Antioch* (1821); *History of the Jews* (1829); *History of Christianity to the Abolition of Paganism* (1840); *History of Latin Christianity* (1855). His last work was the *Annals of St. Paul's Cathedral*, which, after his death, was completed and published by his son.

Milne-Edwards, HENRI, French naturalist, the son of English parents, was born at Bruges 1800, and died 1885. He studied medicine and received his degree in Paris; succeeded Cuvier at the Academy des Sciences in 1838; was appointed professor of natural history at the Muséum in 1841, professor of zoology in 1862. He published *Elements of Zoology*, *Natural History of Crustaceans*, &c., but his great work was *Leçons sur la Physiologie et l'Anatomie Comparée* (1857-83, 14 vols.).

Milo. See *Melos*.

Milreis (mil'rēs), a Portuguese coin, equal to one thousand *reis*, or 4s. 4d.

Milt. See *Spleen*.

Milti'ades (dēz), an Athenian general of the 5th century B.C. When Greece was invaded by the Persians he was elected one of the ten generals, and drew up the army on the field of Marathon, where, B.C. 490, he gained a memorable victory. Next year he persuaded the Greeks to intrust him with a fleet of seventy vessels, in order to follow up his success. With this, to gratify a private revenge, he attacked the island of Paros, but was repulsed, and dangerously wounded. On his return to Athens he was impeached, and condemned to pay a fine of fifty talents. Being unable to pay, he was thrown into prison, where he soon after died of his wound.

Milton, JOHN, English poet, the son of John Milton, scrivener, London, was born in the metropolis, Dec. 9, 1608; died there, Nov. 8, 1674. His father had him carefully educated,



John Milton.

and at the age of seventeen he entered Christ's College, Cambridge, where he resided for seven years, took his B.A. and M.A. degrees, and excelled in Latin verse and English composition. It had been intended by his parents that he should enter the church, but their puritanical beliefs and his own scruples regarding the oaths decided otherwise. During this period were written: *On the Death of a Fair Infant* (1625-26); *On the Morning of Christ's Nativity* (1629); *On Shakspeare* (1630); *On Arriving at the Age of Twenty-three* (1631); and the *Epitaph on the Marchioness of Winchester*. Leaving the university he went to reside

with his father, who had retired to Horton in Buckinghamshire, and here he remained for the following six years. In this leisured retreat he studied classical literature, philosophy, mathematics, and music. To this period belong his Latin hexameters *Ad patrem*; the fragment called *Arcades*; *L'Allegro* and *Il Penseroso*; the beautiful monody of *Lycidas*, occasioned by the death of his college friend Edward King; and the pastoral masque of *Comus*, played before the Earl of Bridgewater at Ludlow Castle in 1634. In 1637, on the death of his mother, he made a continental journey, in which he visited Paris, where he was introduced to Grotius, Florence, where he met Galileo, Rome and Naples. After remaining abroad for fifteen months he returned to England. His Italian sonnets and some other pieces were written during this journey. The home at Horton having been broken up, Milton settled in the metropolis, and undertook the education of his two nephews, the sons of his sister, Mrs. Phillips, and to these, betimes, were added the sons of a few personal friends who boarded or received daily lessons at his house in Aldergate Street. While settled here his *Paradise Lost* was partially sketched out, but the immediate fruits of his pen were (1641-42) vigorous polemical treatises entitled *Of Reformation touching Church Discipline in England*; *Of Prelatical Episcopacy*; *Animadversions Against Smectymnuus*; *The Reason of Church Government*; and the *Apology for the Animadversions*. In the summer of 1643 Milton married Mary Powell, the daughter of a royalist family. Divided from her kinsfolk by politics, he was also dissimilar to his wife in age—she being little more than seventeen, while he was thirty-five. Moreover, she found his habits austere and his house dull, with the result that she returned to her father about a month after marriage. Milton quickly made his private trouble a plea for public protest against the marriage laws in his pamphlets on the *Doctrine of Divorce*, *The Judgment of Martin Bucer*, *Tetrachordon*, and *Colasterion*. In the end, however, his wife returned in 1645, bore him three daughters, and continued to live with him until her death in 1653. Besides his pamphleteering he was at this time occupied in publishing the first edition of his *Minor Poems* in Latin and English (1645), with no apparent recognition of his claims as a poet. In connection with his divorce pamphlets he was prosecuted by

the Stationer's Company for having published them without license or registration. His answer to this was the famous *Areopagitica*, a speech for the liberty of unlicensed printing, which he addressed to the parliament of England. When in 1649 Charles I. was executed and a republic established, Milton avowed his adherence to it in his pamphlet *Tenure of Kings and Magistrates*, and was appointed foreign (Latin) secretary to the commonwealth. While occupying this position he wrote in 1649 *Eikonoklastes* (Image-breaker) in answer to the *Eikon Basilikē* (which see), and his *Pro Populo Anglicano Defensio* (Defence of the People of England), the latter in answer to *Salmasius of Leyden*, who had vindicated the memory of the late king. In this literary task his eyesight suffered so much that in 1652 he became totally blind. Nevertheless he continued Latin secretary with the assistance of Andrew Marvell, and dictated some of Cromwell's most important despatches. Upon the death of the latter, and in the confusion which resulted, Milton in 1659 wrote his *Ready and Easy Way to Establish a Free Commonwealth*. But when Charles II. was restored a few months later, the blind politician remained in hiding, his books were burned by the common hangman, and he himself narrowly escaped the scaffold. He had married a second wife in 1656, who fifteen months after had died in childbirth; in 1663 he married a third time, and began the writing of *Paradise Lost*. This was published in 1667, the publisher agreeing to pay the author £5 down and a further £5 after the sale of each edition of 1300 copies. The published price was three shillings, and the poem was at first in ten books. In two years a second edition, now arranged into twelve books, was printed, and Milton's position as the greatest poet of his time was established. In 1670 there appeared his *History of Britain to the Norman Conquest*, and in the following year the continued vigour of his poetic faculty was shown in *Paradise Regained* and *Samson Agonistes*. In 1674, the last year of his life, he printed his *Epistolæ Familiares* and *Prolusiones Oratoriæ*. His death took place at his house in Bunhill, and he was buried in the church of St. Giles, Cripple-gate.

Milton, Northumberland co., Pa. Pop. 1890, 5317.

Miltwaste. See *Scale-fern*.

Milwau'kee, chief city and port of Wis-

consin, United States, on the west shore of Lake Michigan, which here receives the united rivers Milwaukee and Menomonee. Part of the town occupies a high bluff overlooking the lake, and among the chief buildings of the city are the court-house, post-office, two cathedrals, free library, and museum. The main element in the prosperity of Milwaukee is its vast trade in grain, and extensive industrial establishments connected with iron, flour, leather, lager-beer, agricultural implements, &c. A fire, Oct. 28, 1892, involved a loss of \$5,000,000. Pop. 1890, 204,468.

Mimbar, the pulpit in a mosque. See *Mosque*.

Mime, a kind of dramatic performance common among the ancient Greeks and Romans. Mimes appear to have originated among the Greek colonists of Southern Italy, and consisted first of extemporaneous representations at festivals of ludicrous incidents of common life, but were afterwards more artistically developed. The Roman mimes were not unlike modern pantomime, but frequently indecent.

Mimicry, the name given to that condition or phenomenon which consists in certain plants and animals exhibiting a wonderful resemblance to certain other plants or animals, or to the natural objects in the midst of which they live. This peculiar characteristic is generally the chief means of protection the animal has against its enemies. It is well seen in the leaf-insects (*Phyllium*) and in the 'walking-stick' insects (*Phasmidæ*). Certain tropical butterflies reproduce the appearance of leaves so closely that even the parasitic fungi which grow upon the leaves are imitated. So also a South American moth has a most accurate resemblance to a humming-bird; while the cacti of America and the euphorbias of Africa might easily be mistaken for each other, though widely different in structural characters. The theoretical explanation of this mimetic quality is attributed by recent biologists to purposes of self-preservation. Thus, the form or colour which enables an animal to seize its prey easily and to protect its own life by deceptive resemblance to other objects, is conceived to be that form and colour which is most likely to survive. The term is used in a merely metaphorical sense, and implies no act of volition on the part of the animal or plant.

Mimner'mus, an ancient Greek poet and musician, who was probably born at Smyrna,

and flourished from about 630 to 586 B.C. His poems were burned by the Byzantine monks, and only a few fragments belonging to a poem called *Nanno* have come down to us.

Mimo'sa, a genus of leguminous plants, type of the subdivision *Mimoseæ*. See *Sensitive Plant*.

Mim'ulus, a genus of plants, nat. order *Scrophulariaceæ*. There are about forty species, natives of extratropical and mountainous regions of Asia, Africa, Australia, and America. They have often handsome red, yellow, or violet flowers. *M. luteus* has become naturalized in Britain on the banks of streams, &c. *M. moschatus* is the musk plant of gardens. Others are favourite flowers.

Mimu'sops, a genus of large, milky-juiced tropical trees common to both hemispheres. See *Bullet-tree*.

Mina, among the Greeks, a weight of 100 drachmæ; also, a piece of money valued at 100 drachmæ. The Attic mina (sixty of

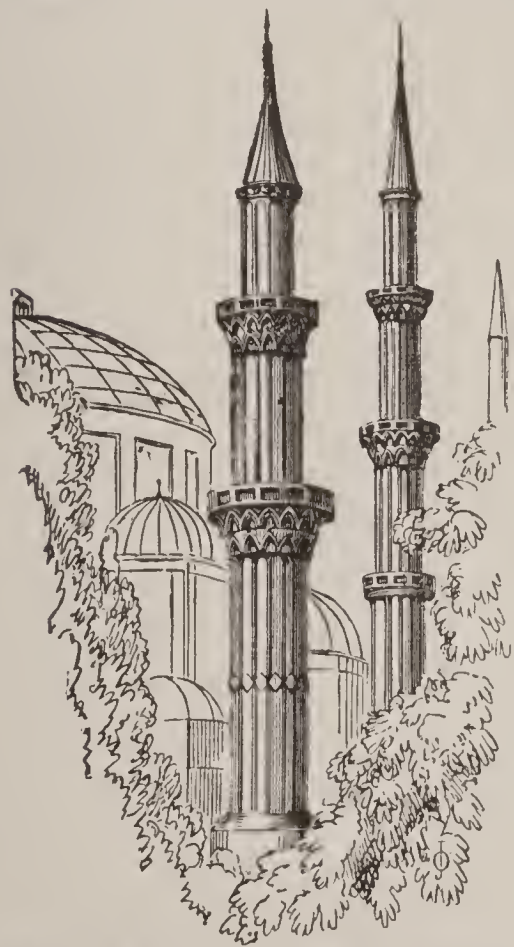
or more projecting balconies, commonly attached to mosques in Mohammedan countries, and frequently of very elegant design. Minarets are used by the priests for summoning from the balconies the people to prayers at stated times of the day; so that they answer the purpose of belfries in Christian churches.

Minas Geraes (mē'nās je-rä'es), the most populous province of Brazil, bounded by Bahia, Espirito Santo, Rio de Janeiro, São Paulo, and Goyaz; area, 246,700 square miles. It forms a high plateau varied by hills, and the climate is temperate and healthy, except along the swampy riversides. It is rich in minerals; sugar-cane, cotton, millet, tobacco, and coffee are cultivated; timber is abundant. The chief town is Ouro-Preto. Pop. 3,018,807.

Minch, THE, the channel off the northwest of Scotland, between the mainland and the island of Lewis.—The **LITTLE MINCH** is the channel between the island of Skye and the outer Hebrides.

Mincio (min'chō; *Mincius*), a river of Italy, which flows from the south extremity of Lake Garda, and after forming the lake and marshes that surround Mantua falls into the Po 8 miles below the city. The length of its course is 42 miles.

Mind, a term that admits of no exhaustive scientific definition, but may be said to indicate, generally, the power possessed by each of us in virtue of which we know, think, feel, and will. Limited to the individual, and verifiable only through individual experience, its phenomena have long been held to represent the immaterial as distinguished from the material world, *mind* and *matter* forming thus a direct antithesis. Yet we have no experience of mind as apart from matter, and many, instead of regarding mind as a separate entity, hold it rather to be akin to some function of the nervous system. The mental powers or functions are generally classed as three—intellect or understanding, emotion or feeling, and volition or will. Sometimes the term mind is specially given to the first (the intellect), which itself possesses several powers or capacities, such as perception, memory, reasoning, imagination. It is by the intellect that we acquire knowledge, investigate phenomena, and combine means to ends, &c.; but the ultimate analysis of our mental powers gives different results with different investigators, the classification of the faculties of the mind being thus very various. The science that has



Minarets—Mosque of St. Sophia, Constantinople.

which made a talent) was worth £4, 1s. 3d.; the Æginetan mina, £5, 14s. 7d.

Mina Bird. See *Grakle*.

Min'aret, a slender lofty turret rising by different stages or stories, surrounded by one

specially to do with the investigation of mental phenomena is generally known as psychology. See also *Emotion, Imagination, Will, &c.*

Mindana'o, one of the Philippine Islands, next to Luzon in point of size, about 300 miles long and 105 broad; area, 34,250 sq. miles. The Spaniards occupy the north portion of the island, the remainder being under native rulers, of whom the Sultan of Mindanao is the chief. All the country, except upon the sea-coast, is mountainous, the volcano of Apo being 8819 feet high. Some coffee, cocoa, and cotton are exported. The chief town is Zamboanga or Samboangan, a port and naval station at its western extremity. Spanish population estimated at 50,000; total of the island at 845,000.

Minden, a town of Prussia, province of Westphalia, on the Weser, 35 miles w.s.w. Hanover. It has a fine cathedral of the 13th century, and manufactures of tobacco, chemicals, &c. The French were defeated here during the Seven Years' war (1759) by an Anglo-Hanoverian army. Pop. 18,592.

Mindo'ro, one of the larger of the Philippine Islands, situated south of Luzon, from which it is separated by the Strait of Manila; about 110 miles long by about 53 broad. It is evidently volcanic, the climate is hot, and the rain almost incessant. Rice, cacao, and wild cinnamon are among the products. Pop. 61,900.

Mine, in military language a subterranean passage dug under the wall or rampart of a fortification, or under any building or other object, for the purpose of blowing it up by gunpowder or other explosive. What are called *submarine mines* are now used in the defence of places liable to attack from a naval force. Such a mine consists of a charge of some powerful explosive inclosed in a suitable case, which is anchored at the bottom of the water, or at a suitable depth, and may be exploded at will by means of electricity so as to blow up a hostile vessel, or the mere contact of a vessel may cause it to explode.

In ordinary language a mine is a pit or deep excavation in the earth, from which coal, metallic ores, and other mineral substances are taken. The pits from which stones only are taken are called *quarries*. See *Mining* and *Mine Inspection*.

Mine Inspection was first instituted in 1850 under the provisions of a Bill for the Better Regulation of Coal-mining in the

United Kingdom. Three inspectors were at that time appointed, but this number was supplemented under the Amended Acts of 1860 and 1872, so that there are now twelve inspectors with twelve assistants. In the Coal Mines Regulation Act, 1887, previous acts are amended and consolidated, while further provision is made for the better inspection of locked safety-lamps, the use of explosives in blasting, the ventilating and fencing of shafts, and the upkeep of machinery. In the case of an accident which has caused injury of person or loss of life, notice must be sent to the mine inspector for the district, so that he may report the same to the home secretary, who shall provide for a formal investigation should he think fit. It is the duty of the inspector to see that women, girls, or boys under twelve years do not work below ground in the mine, and that the conditions and hours of their employment above ground are strictly observed. It is also enacted that every mine shall be under the supervision of a certificated manager and under-manager, either of whom must visit and inspect the mine daily. Wages are to be paid by the amount of mineral won (the men having the appointment of a check-weigher), and no wages are permitted to be paid in a public-house. In the exercise of his duty the mine-inspector is permitted to inspect the books, plans, and documents which the law prescribes shall be kept by the mine-owner, and he is also entitled to receive all special rules and annual returns.

Mineral Caoutchouc, a variety of bitumen, intermediate between the harder and softer kinds. It sometimes much resembles india-rubber in its softness and elasticity, and hence its name.

Mineral'ogy, the science which treats of the properties of mineral substances, and teaches us to characterize, distinguish, and classify them according to their properties. It comprehends the study or science of all inorganic substances in the earth or on its surface. As distinguished from geology, mineralogy deals with the various mineral bodies as separate constituents of the earth's crust, and examines their properties as such, while geology treats them in the aggregate, as building up the crust of the earth, and as forming masses and presenting phenomena that have a history to be investigated. Minerals may be described and classified either in accordance with their chemical composition, their crystallographic

forms, or their physical properties of hardness, fracture, colour, lustre, &c., or a combination of all, and thus various systems of classification have been adopted. Most minerals crystallize in definite forms, and this form is one of the chief characteristics of many mineral species. There are not a few, however, which are not distinctly crystalline, but are earthy or occur in masses; the latter exhibiting important varieties of structure, as *laminated*, *fibrous*, *granular*, *reniform*, *botryoidal*, &c. Other distinctive characteristics are *colour*, which, however, varies even in the same mineral; *lustre*, the character of the light reflected from the surface, and described as *adamantine*, *vitreous*, *nacreous*, *greasy*, *silky*, &c.; *fracture*, or the character of the freshly-broken surface; *streak*, or the appearance and colour of a furrow made in the mineral by a hard-tempered knife or file; and *hardness*, which is now determined by what is called Mohs's scale. In this scale certain minerals are represented by numbers from 1 to 10, viz. (1) *talc*, common laminated light-green variety; (2) *gypsum*, a crystallized variety; (2·5) *mica*; (3) *calcite*, transparent variety; (4) *fluorspar*, crystalline variety; (5) *apatite*, transparent variety; (5·5) *scapolite*, crystalline variety; (6) *potash felspar*, white cleavable variety; (7) *quartz*, transparent; (8) *topaz*, transparent; (9) *corundum*; (10) *diamond*. To determine the hardness of a mineral, it is ascertained by experiment which of these it will scratch and which will scratch it; thus if a mineral will scratch fluorspar but not apatite, while the latter will scratch it, its hardness is between 4 and 5. Diaphaneity, refraction, polarization, electric properties, &c., are all distinguishing marks. In the classification of minerals, their chemical composition, though not to be regarded by itself, is of much importance. Among famous names in connection with mineralogy may be noted those of Werner, Haiiy, Mohs, Dana, &c.

Mineral Waters is the term commonly applied to the spring-waters that contain an unusual quantity of such substances as sodium, magnesia, iron, carbonic acid, and sulphur; but it cannot be used in any absolute fashion. The most popular European springs are those of Aix-la-Chapelle, Wiesbaden, Baden-Baden, Carlsbad, Ahrweiler (Apollinaris), Friedrichshall, Buda-Pesth (Hunyadi-Janos), Vichy, and Bath. The waters are usually drunk at an early hour before breakfast, and the curative effects

are greatly aided by early rising, moderate exercise, mental relaxation, and complete freedom from all kinds of excess. It has not been found practical or useful to classify mineral waters under their chemical elements, but the attempt has been made, as where the springs are described as—salt, earthy, sulphur, iron, alkaline, and alkaline-saline. Besides the substances which these terms indicate, the waters are frequently impregnated with carbonic acid gas, which is found to aid digestion while giving a pleasant stimulus to the general system.

Mineral Wool, a substance which is produced from the vitreous liquid slag of a blast-furnace drawn out into fine fibres under pressure of steam. The slag, when in a molten condition, is driven by the steam from the furnace through a crescent-shaped aperture, and suddenly cools into long fibrous filaments. The thin, glassy, thread-like substance thus produced is useful as a non-conductor of heat, and it has, therefore, been largely employed as a covering for boilers and steam-pipes, to prevent the freezing of water in pipes, &c.

Minerva, a daughter of Jupiter, and one of the great divinities of the ancient Romans. She was looked upon as the patroness of all arts and trades, and her annual festival, called Quinquatrus, lasted from the 19th to the 23d of March inclusive. This goddess was believed to protect warriors in battle, and to her was ascribed the invention of numbers, and of musical instruments, especially wind-instruments. At Rome a temple was built for Minerva by Tarquin on the Capitol, where she was worshipped along with Jupiter and Juno; and there was also a temple on the Aventine dedicated to herself alone. This deity is supposed to be of Etruscan origin, and her character has much in common with the Greek goddess Athena (which see).

Mingre'lia, a district of the Caucasus, in Russia, since 1867 part of the province of Kutais; area, 2100 square miles. The Mingrelians are closely related to the Georgians. The country is mountainous but fertile, and the chief products are corn, wine, oil, &c.

Minho (min'yō), more fully ENTRE DOURO E MINHO, a province of Portugal, bounded on the north by the river Minho, south by the Douro, and west by the Atlantic; area, 2706 square miles. The surface is generally mountainous. The most important products are wine, flax, cork, and oranges. Pop. 1,014,768.

Minho, a river of Spain and Portugal, in the north-west angle of the peninsula; length, 130 miles.

Min'iature, a small painting, especially a portrait, executed with delicate care, chiefly upon ivory, also upon vellum, paper, &c. The term is from the Italian *miniatura*, originally applied to a small painting, such as those formerly used to adorn manuscripts, from the common use of *minium* or vermilion in the ornamentation of the illuminated manuscripts in the middle ages. The art of miniature painting was carried to its highest perfection, chiefly in France, during the 18th century.

Minim, in music, a note equal in duration to one-fourth of a breve, and one-half of a semibreve.

Minim Friars, or **MINIMS** (from L. *minimus*, least), an order of reformed Franciscans, founded by St. Francis of Paula in Calabria in 1473. Their dress is black, and, like that of the Franciscans, provided with a scourge. They belong to the mendicant orders, and possessed, in the 18th century, 450 convents in thirty provinces.

Minimum Thermometer. See *Thermometer*.

Mining is the term applied to the underground engineering process by which minerals are excavated and brought to the earth's surface. That this process in a rude form was known to the ancients is shown by references in the book of Job, the records of the Phœnicians and Egyptians, and the signs of supposed Roman excavations found in Britain. The first important historical record of mining operations in England is found in the charter to dig for coals, granted in 1259 by Henry III. to the freemen of Newcastle-on-Tyne. Then, again, in the reign of Henry VII. a commission was empowered to dig and search for metals; while during Elizabeth's reign German miners were induced to visit England, and extensive privileges granted to the 'Society of Mines Royal.' Begun thus early, the development of mining has been greatly advanced by the introduction of gunpowder for blasting purposes; by the use of steam-engines for pumping water from the mine and bringing material to the surface; and by the aid of improved ventilation, which now enables mines to be carried to deeper levels. In describing the modern methods of mining it is found convenient to draw a distinction between metal and coal.

Metalliferous mining has to deal with a

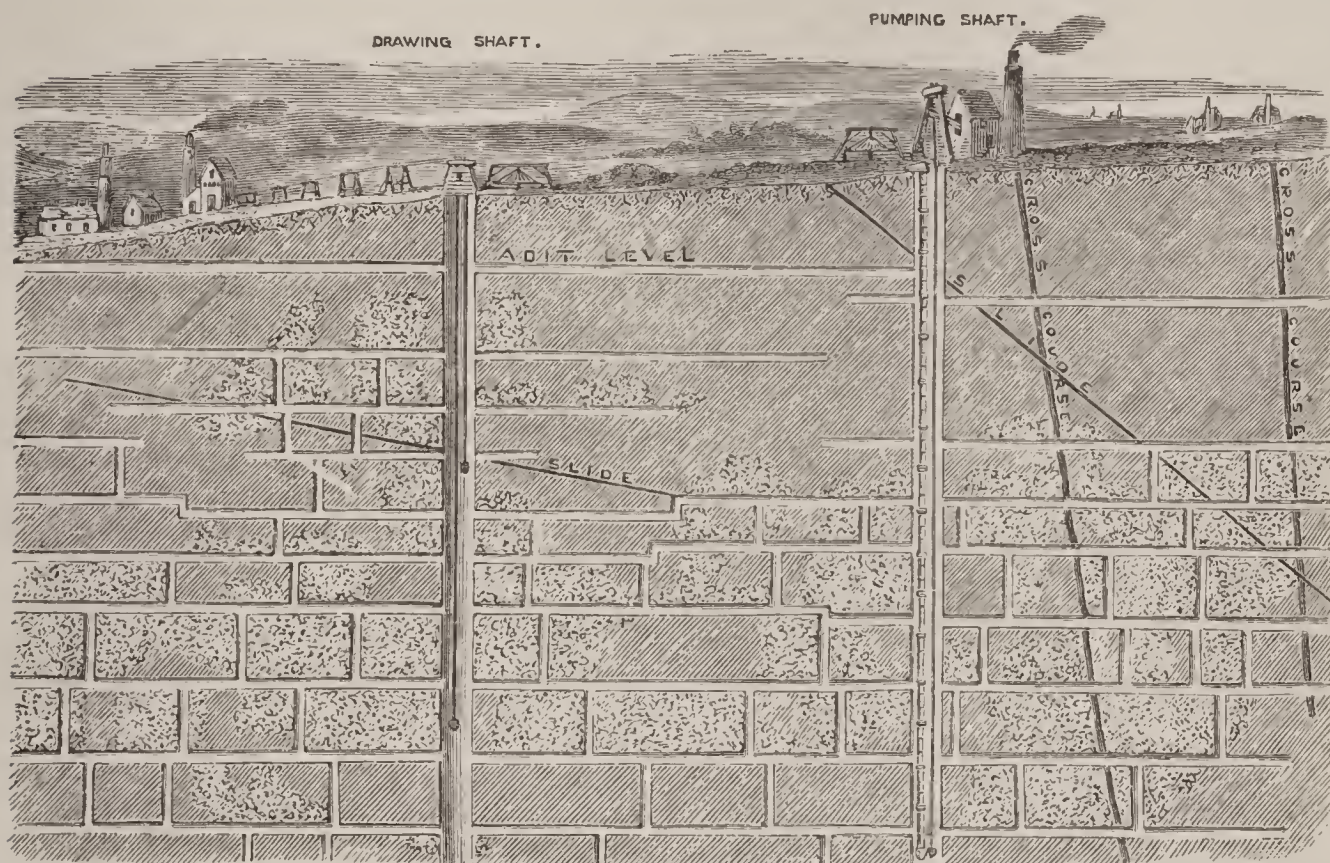
mineral which is found in *lodes* or *veins* irregularly imbedded in rock-fissures, the trend of which is uncertain and the thickness variable. In preparing to excavate this irregularly distributed mineral two shafts are sunk in the vicinity of the lodes, one of which is used for pumping and ventilating the mine, the other for drawing the material to the surface. From these two shafts horizontal galleries are driven at distances of 10 or more fathoms apart, an additional gallery being driven at intervals of 10 or 15 fathoms as the mine is increased in depth. The galleries are driven as far as possible on the course of the lode, and if the lode is going down on a slope, the galleries in such case are not vertical above one another. These galleries are connected by vertical passages or 'winzes;' and in this way they are ventilated, and the material to be excavated is divided into rectangular blocks. The metal ore after being excavated is broken up by the miner, put into a barrow, wheeled to one of the main galleries, thence transported in cars drawn on rails by men, mules, or engines, to the main shaft. There it is hoisted to the surface in an iron 'kibble' or a wooden 'skip' which travels up and down in guides fixed to the side of the shaft. Access to many metalliferous mines is still obtained by means of ladders fixed almost vertically in the sides of the shaft. This toilsome method is averted in some mines by what is called a 'man-engine,' which consists of two rods with platforms attached which move up and down reciprocally the distance between two platforms, the miner ascending or descending from the platform of one rod to that of another alternately. Besides the shafts there is usually an entrance to the mine called an 'adit' or 'day-level' which is driven straight into the mine from the nearest convenient depression or valley and is mainly used for purposes of drainage. Adits are sometimes of great length.

Coal-mining has to deal with a mineral which is deposited in *seams* or *beds*, sometimes nearly horizontal, at other times nearly vertical. These seams are interstratified with layers of sandstone, shale, clay, &c., and when the beds are tilted the coal has been frequently found outcropping at the surface. In the chief coal-fields of the United Kingdom this outcrop coal has been exhausted, and it is now found necessary to approach the coal-seams by means of shafts, of a rectangular or circular shape, sunk into

MINING.

the earth. The rectangular shape, commonly 18 feet by 6 feet, is that which is used most frequently in Scotland, while the circular shaft obtains in the large mines of Northumberland and Durham. Before sinking the shaft it is expedient to bore down through the strata in order to test the thickness and direction of the coal-measures. The bore-hole is usually begun by digging a small pit about 6 feet deep,

and the old method was to pierce the rock by means of a cutting-tool attached to long rods and worked by a lever with hand-power. Various improvements on this slow method have been recently made, as where hydraulic or steam power is used to drive the boring-rods, and diamond drills employed instead of the steel tool. (See *Boring*.) When this boring test has been found satisfactory the shaft is then sunk. One



Section of Part of Devon Great Consols Copper Mine.

The parts lightly shaded indicate where the mineral has been removed.

shaft not unfrequently intersects a number of workable coal-seams, these being generally separated by shale, sandstone, and limestone. Seams of coal vary in thickness from 2 inches up to 30 feet as in Staffordshire, or even to 90 feet as in a small coal area at Johnstone, near Glasgow. The coal having been reached, the mining engineer has to devise the safest and most economical method of cutting the coal and sending it to the surface. There are two commonly adopted methods of working out coal-seams, viz. the 'pillar-and-stall' or 'stoop-and-room' system, and the 'longwall' or 'longwork' system. The former method consists in excavating 'rooms' in such a manner as to divide the coal into rectangular pillars or 'stoops.' In the early days of coal-mining the stalls were made large and

the upholding pillars left small, no attempt being afterwards made to recover the coal in these pillars. When the floor of the mine was of soft clay or lime the weight of the roof drove the pillars down, causing the floor to rise in the centre between the pillars, and establishing an undulating movement throughout the underlying strata called by miners 'the creep.' To prevent this the coal is now left in wide barriers or 'pannels' which divide one part of the workings from another. The pillars of coal which are now left are recovered by a second operation, which consists in cutting them out after a division or pannel has been excavated to its boundary, or by working them out when the stalls have been driven the length of two or three pillars. These pillars are, in most cases, about 20

yards square, and in one pannel of the mine there are often 600 such pillars. In the 'longwall' method the miner cuts into, or 'holes' into, the underpart of the coal-bed for two or three feet, and then, with the aid of wedges driven in atop, he loosens and extracts the mass of coal which has been 'holed.' By this system the entire coal-seam is at once extracted, while the empty space or 'goaf' is filled in with waste material as the work advances.

One of the most important matters connected with coal-mining is *ventilation*. To facilitate this there are two openings into the mine, which are technically called the 'intake' and 'return' air-passages. The necessary supply of pure air is maintained either by the natural heat of the mine causing a constant inrush of cold air; by pumps or fans forcing the air down the 'downcast' shaft or drawing it up the 'up-cast' shaft; or by furnace ventilation. This latter mode is considered the most efficient. The furnace by its heat causes a constant current up the upcast shaft, thus drawing the vitiated air away from the workings. Connected with ventilation is the dangerous accumulation of fire-damp which may take place in a mine, to guard against which safety-lamps have been introduced. See *Fire-damp*, *Safety-lamp*.

The pumping of water out of the workings is an essential part of mining. Some of the largest pumping engines raise from 2000 to 3000 gallons of water per minute.

Minion, a size of type between brevier and nonpareil. See *Printing*.

Minister, a designation in general use in the United States (and less widely in Britain) applied to a preacher or clergyman.

Ministers, the name applied in politics to the chief servants of the state in the administration of its affairs, and the chief representatives of a country at a foreign court. (See *Ministers, Foreign*.) The former are known collectively as the *ministry*, and the head of the administration is called the *prime-minister* or *premier*. In Britain the number of ministers who hold cabinet rank varies in different administrations, but it invariably includes the first lord of the treasury, lord chancellor, lord president of the council, the secretaries of state for home, foreign, war, colonial, and Indian affairs, the chancellor of the exchequer, and the first lord of the admiralty. (See *Cabinet*.) All the ministers are appointed by the prime-minister, sub-

ject to the approval of the crown. When an appointment as minister with emoluments is accepted by a member of the House of Commons he must vacate his seat and seek re-election; but when he merely moves from one ministerial office to another no re-election is necessary. The ministry, including the officers of the household, number nearly seventy persons, most of whom receive salaries. When the ministry is defeated in the House of Commons on an important question of policy it is customary for the prime-minister to tender his resignation to the sovereign, or crave leave to appeal to the country. Should the decision of the House of Commons be endorsed by the country at a general election it is usual for ministers to resign, to admit of another administration being formed before the new parliament meets. On the resignation of a ministry it is usual for the sovereign to send for the leader of the opposition, who is asked to form a ministry in place of that which has resigned.

Ministers, FOREIGN, are those accredited representatives which one country sends to another. Generally they are divided into three classes. The highest in rank is the *ambassador extraordinary*, who can claim to represent his state or sovereign in his own person, and receive honours and enjoy privileges accordingly. The *legates* and *nuncios* of the pope also belong to this class. *Envoys extraordinary*, *internuncios*, and *ministers plenipotentiary* belong to the second class, and neither hold the same degree of power nor receive the same distinction as the former. The third class includes *ministers resident*, *envoys*, and *chargés d'affaires*, the last being sometimes regarded as a fourth class. Persons who are sent merely to conduct the private affairs of their monarch or his subjects in a foreign place are called *agents* or *residents*; and where they are occupied chiefly with subjects of a commercial character they are called *consuls*. When the foreign minister is accredited directly to the sovereign of a state he can demand an audience, his person is considered inviolable, and he is freed from taxes and territorial restrictions. See *Ambassador*, *Envoy*, *Consul*.

Min'ium, the red oxide of lead, often designated *red lead*, and commonly used as a pigment for ordinary purposes.

Min'iver, the Siberian squirrel, which has fine white fur; also the fur itself.

Mink, an American and European quad-

rupted, allied to the polecat (*Putorius Vison* or *Lutreſſa*). It is semi-aquatic, burrowing on the banks of rivers and ponds, living on frogs, crayfishes, and fishes, which it pursues in the water. It exhales a strong odour of musk, and its fur is in considerable request. The European and American minks are by some regarded as distinct species.

Minneap'olis, a city of the United States, capital of Hennepin county, Minnesota, on both sides of the Mississippi, at the Falls of St. Anthony, 8 miles N.W. of St. Paul. It is regularly laid out with avenues 80 feet wide running east and west, having double rows of trees on each side. The public buildings include the court-house, city-hall, academy of music, opera-house, athenæum, the University of Minnesota, Hamline University, numerous schools, churches, &c. The principal industries are the manufacture of flour, engines, boilers, agricultural implements, carriages, wagons, and pork-packing. The city possesses a territory of about 33 square miles, with the celebrated falls of Minnehaha and several fine lakes. It is the centre of an important railway system. Pop. 1890, 164,738.

Minnesingers, or MINNESÄNGER (O. Ger. *minne*, love), a class of German lyric poets of the 12th and 13th centuries, so called from love being the chief theme of their verse. They consisted almost exclusively of men of aristocratic birth, the most prominent names being Wolfram von Eschenbach, Gottfried von Strassburg, Hartmann von der Aue, and Walther von der Vogelweide. They sang their lyrics to the accompaniment of the viol, generally in honour of high-born dames. The songs, chiefly in the Swabian dialect, were seldom written down by their authors, and the manuscripts which contain their verse are mostly the result of oral traditions and repetitions. The largest collection of their songs was compiled by Rüdiger von Manesse, burgomaster of Zürich in the early part of the 14th century, and a good selection was published by Bartsch, entitled *Deutsche Liederlichter* (Leipzig, 1864). This remarkable poetical movement gradually merged into that other class of German lyric poets called Meistersingers. See *Mastersingers*.

Minneso'ta, one of the United States of America, bounded north by Canada, east by Lake Superior and Wisconsin, south by Iowa, and west by the Dakotas; area, 83,365 sq. miles. The chief towns are Minneapolis, and the capital, St. Paul. This state occupies

the summit of a central plateau formed by the conterminous basins of the Mississippi, the St. Lawrence, and Lake Winnipeg. The surface is generally an undulating plain, with a general slope south-east towards the basin of the Mississippi, which, with its affluents, drains about two-thirds of the state. The Red River of the North, which forms part of the west boundary, also receives a part of the drainage, and part is carried by Rainy Lake River to the Lake of the Woods, part to Lake Superior. Lakes are numerous, including Leech Lake, Red Lake, Vermilion Lake, Mille Lacs, and part of Lake of the Woods and Rainy Lake. Iron and copper are among the chief minerals. The soil for the most part is good, and the Red River valley is considered the finest wheat-growing district in the state. A large forest known as the 'Big Woods' extends over the centre of Minnesota for the length of 100 miles and a breadth of 40 miles, and the country, especially above lat. 46°, is well wooded with pine, spruce, oak, beech, elm, maple, while the prairies have been planted with 20,000,000 trees by the aid of state bounties. The climate is on the whole excellent, the winters, though cold, being clear and dry; and, the temperature being equable, the state has become a winter resort for invalids. The chief industries are agriculture and lumbering. Railways extend to about 5000 miles. By the state constitution a portion of land is set apart in each township to provide a perpetual education fund. The state university is at Minneapolis. The state sends two senators and five representatives to the national congress. Minnesota was explored in 1766; became part of the United States in 1783; the Indian title to its lands was extinguished in 1838; its territory was organized by act of congress in 1849; and in 1858 it was admitted to the Union. Pop. 1890, 1,301,826.

Minnesota River, a river in the United States, which flows through Minnesota and falls into the Mississippi 5 miles above St. Paul; length, 470 miles.

Minnesota University, the state university of Minnesota, established at Minneapolis, and giving free tuition to persons of both sexes. There are four federated colleges in connection with it: (1) for science, literature, and arts; (2) for agriculture; (3) mechanics and engineering; (4) medicine.

Minnow (*Leuciscus phoxinus*), a species of fish belonging to the same genus as the carp. They swim in shoals, seldom exceed

3 inches in length, and make excellent bait for trout. In America various small fish receive this name.

Mino Bird. See *Grakle*.

Minor, a person of either sex under age, who is under the authority of his parents or guardians, or who is not permitted by law to make contracts and manage his own property. See *Age*.

Minor, in music. See *Major*.

Minorca (Spanish, *Menorca*), an island in the Mediterranean, belonging to Spain, the second largest of the Balearic group; area, 260 square miles. It is situated E.N.E. of Majorca, from which it is separated by a strait 27 miles broad. The surface is mountainous, the coast rugged, and the best harbour is at Port Mahon, the capital of the island. Mount El Toro, in the centre, attains the height of about 5000 feet. The soil is not generally fertile, yet a considerable quantity of wheat, oil, wine, hemp, flax, oranges, &c., are produced. Iron, copper, lead, and marble are plentiful. During the greater part of the 18th century Minorca belonged to the British, who finally ceded it to Spain at the Peace of Amiens (1802). Pop. 39,005.

Minorites. See *Franciscans*.

Minor Planets. See *Asteroids* and *Planets*.

Minor Prophets, THE, so called from the brevity of their writings, are twelve in number, viz. Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, and Malachi. Their prophecies are found in the Hebrew canon.

Minos, in Greek mythology, a ruler of Crete, said to have been the son of Zeus and Europa, and a brother of Rhadamanthus. During his lifetime he was celebrated as a wise lawgiver and a strict lover of justice, and after his death he was made, with Æacus and Rhadamanthus, one of the judges of the infernal world.

Min'otaur, in Greek mythology, a monster fabled to have had the body of a man with the head of a bull, and to have fed on human flesh, on which account Minos shut him up in the labyrinth of Dædalus, and at first exposed to him criminals, but afterwards youths and maidens yearly sent from Athens as a tribute. He was slain by Theseus.

Minsk, a town of Russia, capital of government of same name, on the Svislotch, 420 miles south-west of St. Petersburg. It is the see of a Greek archbishop and of a Roman Catholic bishop, and contains two castles. It has some manufactures and a considerable general trade. Pop. 54,307.—

The government, which has an area of 35,290 square miles, has extensive forests and great stretches of marsh or swamp. Pop. 1,646,579.

Minster, anciently the church of a monastery or convent, afterwards a cathedral, as York Minster.

Minstrel, a singer and musical performer on instruments. In the middle ages minstrels were a class of men who subsisted by the arts of poetry and music, and sang to the harp or other instrument verses composed by themselves or others. The person of the minstrel was sacred; his profession was a passport; he was 'high placed in hall, a welcome guest.' So long as the spirit of chivalry existed the minstrels were protected and caressed, but they afterwards sank to so low a level as to be classed, in the reign of Queen Elizabeth, with beggars and vagabonds.

Mint, the name given to several herbaceous aromatic plants of the genus *Mentha*, natural order Labiatae. They are nearly all perennial, having square stems which bear opposite and simple leaves; they are widely distributed throughout temperate regions; and they abound in resinous dots which contain an essential oil. Mint has an agreeable odour, and partakes in the highest degree of tonic and stimulating properties. Spearmint (*M. viridis*) is generally used, mixed with vinegar and sugar, in sauce. Peppermint (*M. piperita*) yields the well-known stimulating oil of the same name. Pennyroyal (*M. Pulegium*) is used for the same purposes as peppermint.

Mint, the place where a country's coinage is made and issued under special regulations and with public authority. In England there was formerly a mint in almost every county; the sovereign, barons, bishops, and principal monasteries exercised the right of coining; and it was not till the reign of William III. that all the provincial mints were abolished. The present mint on Tower Hill, in London, was erected between the years 1810 and 1815. In former times the coinage was made by contract at a fixed price. The English mint supplies the whole of the coinage of the British Empire, except Australia and the East Indies, which are supplied from branch mints at Sydney, Melbourne, Calcutta, and Bombay. In the United States there are mints at Philadelphia, San Francisco, Carson, and New Orleans. In France, as in England, the number of mints was at one time considerable. See *Coining*.

Min'uet, a slow graceful dance said to have been invented in Poitou, in France, about the middle of the 17th century, performed in $\frac{3}{4}$ or $\frac{3}{8}$ time. The term is also applied to a tune or air to regulate the movements in the dance, or composed in the same time.

Mi'nus, in algebra, the term applied to the negative or subtractive sign $-$, which, when placed between two quantities, signifies that the latter is to be taken from the former: thus $a - b$ (called *a minus b*) signifies that b is to be subtracted from a . Quantities which have the sign *minus* before them are called negative or *minus* quantities; as, $-xy$, $-5cd$.

Min'ute, a division of time and of angular measure. As a division of time it is the sixtieth part of an hour. As a division of angular measure it is the sixtieth part of a degree. In astronomical works minutes of time are denoted by the initial letter *m*, and minutes of a degree or of angular space, by an acute accent ($'$).

Mi'ocene (Gr. *meiōn*, less, *kainos*, recent), in geology, the name given by Sir Charles Lyell to a subdivision of the tertiary strata. The terms *Miocene* and *Pliocene* are comparative, the first meaning less recent and the other more recent. The Miocene strata contain fossil plants and shells which indicate a warm climate. The mammals are important, and foreshadow the animal life of the present day. No strata of Miocene age occur in the British Isles.

Miösen (*mycu'sen*), the largest lake in Norway, about 40 miles N.E. of Christiania. It is 62 miles long and about $9\frac{1}{2}$ miles in greatest breadth, and its waters are carried by the Vormen to the Glommen.

Miquelon (*mik-lōn*), an island in the Atlantic Ocean, near the southern coast of Newfoundland, belonging to France. The southern part, called Little Miquelon, was once a separate island, but since 1783 has been connected with it by a sand-bank. The island has been in the possession of the French since 1763. See *Pierre, St.*

Mirabeau (*mē-rà-bō*), GABRIEL HONORÉ RIQUETTI, COMTE DE, French statesman, son of Victor Riquetti, marquis de Mirabeau, born in 1749 at Bignon, near Nemours; died at Paris April 2, 1791. At an early age he manifested extraordinary intelligence; but his youth was a stormy and licentious one, so much so that on several occasions he was imprisoned by his father under a *lettre de cachet*. It was during an imprison-

ment at Vincennes, which lasted three years and a half, that he wrote his *Lettres à Sophie*, *Lettres de Cachet*, and *L'Espion Dévalisé*. On his release from this prison he lived for some time in Holland and England, returning to France in 1785. On the assembling of the states-general Mirabeau, elected for Aix, soon became prominent. When the king required the *tiers état* to vote apart from the other two orders it was Mirabeau who counselled resistance, demanded the withdrawal of the troops, consolidated the National Assembly, and defied the king's



Mirabeau.

orders. For some months he continued to lead, but he soon found that the members of the assembly were mostly impracticable and inexperienced men, whose chief function was to discuss an ideal constitution. As a practical statesman Mirabeau desired action, and for this reason he attempted to form alliances with Lafayette, the Duke of Orleans, Necker, and finally with the queen. Correspondence with the latter was maintained through La Marck, and he received a subsidy from the royal party. No practical result followed from this secret alliance, for the queen rejected Mirabeau's counsel and suspected his methods of government. Whether he might ultimately have been able to guide the revolution into peaceful ways has always been a matter of conjecture to historians, but this possibility was prevented by his death in 1791. This was regarded as almost a national calamity, and the people buried him with splendid pomp in the Pantheon.

Mirab'ilis, a genus of plants, nat. ord. Nyctagineæ, one species of which, *M. jalapa*, is well known in gardens as the marvel of Peru. It is a native of S. America.

Miracle (Latin, *miraculum*, a wonder, a prodigy; in the original Greek *sēmeion*, a sign, *teras*, a wonder or prodigy), a suspension of, or deviation from, the known laws of nature, brought about by the direct interference of a supreme supernatural Being. It is in its nature, as the term implies, an occurrence which is strange, marvellous, inexplicable, and is usually connected with some ulterior moral purpose. By the elder theologians a miracle was conceived to be the triumph of the Divine Will over the work of His hands and the laws of His making. In modern exegesis, however, the miraculous element is not considered to give evidence of opposing forces. On the contrary, a miracle is explained as a manifestation of the Divine Power working through laws and by methods unknown to us, and which, upon a higher plane, are altogether natural and orderly.

Miracle Plays, a sort of dramatic entertainments common in the middle ages, in which the subjects were taken from the lives of saints and the miracles they wrought. They were originally performed in church, but latterly outside, in market-places and elsewhere. In England they were first produced in the 12th century. They differed from the mysteries mainly in subject. See *Mysteries*.

Mirage (mi-rāzh'), an optical illusion, occasioned by the refraction of light through contiguous masses of air of different density; such refraction not unfrequently producing the same sensible effect as direct reflection. It consists in an apparent elevation or approximation of coasts, mountains, ships, and other objects, accompanied by inverted images. In deserts where the surface is perfectly level a plain thus assumes the appearance of a lake, reflecting the shadows of objects within and around it. The mirage is commonly vertical, that is, presenting an appearance of one object over another, like a ship above its shadow in the water. Sometimes, however, the images are horizontal. *Looming* is a phenomenon of the same nature, in which the objects appear to be lifted above their true positions, so that an observer sees objects which are beyond the horizon. The cause is in both cases the same, for while the mirage is produced in most instances by reflection from

the desert sand, looming is occasioned by reflection from the sky. The phenomenon called Fata Morgana which is sometimes seen on the Calabrian coast is a kind of mirage. By it men and animals apparently of immense size may sometimes be seen presented in the air.

Miramichi (mi-ra-mi-shē'), a bay and river of New Brunswick, Canada. The bay is 20 miles wide at its entrance and runs 21 miles inland. The river falls into the bay after a N.E. course of about 90 miles, of which 40 are navigable for large vessels.

Miran'dola, a cathedral town in Italy, 18 miles N.N.E. of Modena, the birthplace of Giov. Pico della Mirandola (see next art.). Pop. 3029.

Miran'dola, GIOVANNI PICO DELLA, surnamed the *Phœnix*, born 1463, died 1494, was the youngest son of Gianfrancesco della Mirandola, of the princely family of Mirandola. He studied at Bologna and at different towns of Italy and France, attending the most celebrated schools and most distinguished professors. He had few matches as a finished scholar, and challenged disputation on abstruse subjects in many of the famous universities. He endeavoured to harmonize the philosophies of Aristotle and Plato.

Mirecourt (mër-kör), a town in France, department of Vosges, on the Madon, with important manufactures of lace and musical instruments. Pop. 5093.

Mirror, a smooth surface capable of regularly reflecting a great proportion of the rays of light that fall upon it. The mirrors used by the ancients, and more especially by the Etruscans, were made of thin polished bronze, either set in a case or fitted with a handle. Small metal mirrors were also used by the Greeks and Romans, and specimens brought by the latter have been found in Cornwall. In England during the middle ages the gentlewomen carried small circular polished metal mirrors attached to their girdles. These were sometimes also fitted into cases with a lid, the material of which was of gold, silver, or ivory, richly designed and ornamented. The making of glass mirrors, which had their backs silvered with an amalgam of mercury and tin, was early practised by the Venetians, and by strict prohibitive statutes they were long able to keep their workmen in Venice and enjoy a monopoly of the trade. The manufacture of mirrors of this kind was first introduced into England early in the 17th century

The older method of silverizing mirrors by the amalgam of mercury and tin occupied usually a period of weeks, and it has been generally given up. In 1835 Liebig observed that by heating aldehyde in a glass vessel along with an ammoniacal solution of nitrate of silver, a coating of brilliant metallic silver was left upon the glass. This has now been made use of in mirror-making by what are known as the hot and cold processes. In the hot process the glass is first sensitized with a solution of tin, which is then rinsed off and the plate laid upon a flat, double-bottomed metal table heated by steam to about 100° Fahr. In this position a solution of nitrate of silver, ammonia, and tartaric acid in distilled water is poured over it; and if the temperature is kept uniform a thick deposit of silver will be formed in about half an hour. When the silver layer is carefully wiped this process is repeated. In the cold process a solution of nitrate of silver, nitrate of ammonium, and caustic soda dissolved in water, is mixed with a solution of loaf-sugar, vinegar, and water. This is poured quickly and evenly over the glass plate, and the silver is precipitated in a few minutes, after which it is washed and the process repeated. The silvering is then protected by a coating of shellac or copal varnish. More recently a solution of bichloride of platinum is applied to the surface of the glass and precipitated with oil of lavender in the manufacture of the cheapest mirrors. Mirrors may be plane or spherical, and in the latter case they may be either convex or concave. The optical principles involved in reflection from mirrors are simple.

Mirzapur, a city of India, capital of a district of same name, in the N. W. Provinces, on the Ganges, 56 miles below Allahabad and 45 above Benares, was formerly a place of great trading importance. Pop. 56,378.—The district has an area of 5223 square miles. Pop. 1,136,796.

Misdemeanour, a term applied to all crimes and offences, whether of omission or commission, less than felony. Misdemeanours are of two kinds—either those which exist at common law, *mala in se*, or those created by statute.

Misere're (Latin, 'have mercy'), the name of a psalm in the Roman Catholic church service, taken from the fifty-first Psalm, beginning in the Vulgate, '*Miserere mei, Domine*' ('Pity me, O Lord'). The name is also applied to a projecting bracket on the under

side of a hinged seat in a stall of a church; or to the seat and bracket together. The bracket served as a rest for a person standing, the seat being turned up.

Mishna, a collection or digest of Jewish traditions and explanations of Scripture, preserved by tradition among the doctors of the synagogue, till Rabbi Jehudah, surnamed the *holy*, reduced it to writing about the end of the 2d century A.D. The Mishna is divided into six parts: the first relates to agriculture; the second regulates the manner of observing festivals; the third treats of women and matrimonial cases; the fourth of losses in trade, &c.; the fifth is on oblations, sacrifices, &c.; and the sixth treats of the several sorts of purification. See *Talmud*.

Misio'nes, a fertile territory of the Argentine Republic, between the Uruguay and Paraná; area, about 24,000 square miles. Pop. 50,000.

Miskolcz (mish'kolts), a town in Hungary, 90 miles north-east of Budapest. The inhabitants are chiefly employed in agriculture. Pop. 24,320.

Misletoe. See *Mistletoe*.

Mispickel, arsenical pyrites, an ore of arsenic, containing this metal in combination with iron, sometimes found in cubic crystals, but more often without any regular form.

Misprision, in law, any high offence under the degree of capital, but nearly bordering thereon. Misprision is contained in every treason and felony. *Misprision of felony* is the mere concealment of felony. *Misprision of treason* consists in a bare knowledge and concealment of treason, without assenting to it. Maladministration in offices of high public trust is a *positive misprision*.

Missal, in the R. Catholic liturgy, the book which contains the prayers and ceremonies of the mass. (See *Mass*.) The greater part of these prayers and ceremonies are very ancient, and some of them have come down from the times of the Popes Gelasius I. (end of 5th century) and Gregory the Great (end of 6th century); some are even older. The Missal was revised by the Council of Trent, its adoption by the whole Catholic Church demanded by Pius V. in 1570, and in this form it is still retained. In England before the Reformation there were missals of the Sarum use, Lincoln use, Bangor use, &c. Before the invention of printing the writing of missals ornamented with illuminated orna-

ments, initials, miniatures, &c., was a branch of art raised to high excellence in the monasteries.

Missel-thrush. See *Thrush*.

Missions, MISSIONARIES. The first Christian missionaries were the apostles, and by them and their successors Christianity was in the course of a few centuries spread over all parts of the Roman Empire. In some parts, as in Britain, it gave way again before the Germanic invaders of the 5th and 6th centuries, and some of the most noted missionaries were those who reintroduced their faith among the German tribes. St. Augustine or Austin, who was sent by Gregory the Great with forty associates to preach the gospel among the Saxons of Britain at the end of the 6th century, was the first of this missionary group. Britain in its turn sent forth missionaries, such as St. Boniface, 'the apostle of Germany.' Germany also sent out the missionaries who converted Denmark, Sweden and Norway, Poland, Hungary, and Bohemia. The Crusades opened up new spheres for missionary efforts in the East, and two religious orders founded at the beginning of the 13th century, the Dominicans and Franciscans, devoted themselves to preaching among the Mussulmans. Others advanced as far as Tartary, Tibet, and China, but the persecutions there became so violent that those countries had to be abandoned. A new impulse was given to missions by the discovery of the New World. When the way had been prepared by the Spanish and Portuguese armies a crowd of friars of all orders set out for the West Indies, Mexico, Peru, and Brazil, to spread Catholicism; but very few, like Las Casas, protected the natives from rapacity or preached Christianity by their conduct. The powerful order of the Jesuits, which was founded in the 16th century, turned their attention to the East, and the celebrated Francis Xavier, a member of the order, proceeded to India, where his efforts were crowned with success. From India Christianity was introduced into Japan, where it had to contend against terrible persecutions, before which the missionaries were compelled to retire. Father Ricci, another Jesuit, penetrated to Peking, and succeeded about the end of the 16th century in gaining a firm footing. At the beginning of the 17th century some Dominican missionaries made Tonquin and Cochin China the centre of their efforts, and pushed out thence into all the neighbouring countries with consider-

able success. In 1622 Gregory XV. gave a better organization to the Roman Catholic missions by the foundation of the Propaganda, and they are now very widely spread and carried on with much energy.

The earliest Protestant foreign mission appears to have been one which was established in Brazil in 1555. Gustavus Vasa, king of Sweden from 1523 to 1560, towards the close of his reign sent forth a mission to convert the Laplanders. Shortly after the settlement of New England in 1620 John Eliot took a deep interest in the condition of the North American Indians, and in 1646 began a regular mission among that people. But these were only isolated trivial efforts, and it was not until the 18th century that the true missionary spirit awoke. The English took the lead in this movement, but were speedily followed by Danes and Germans, especially the Moravian Brethren. In England in 1701 an association was formed for mission purposes, called the Society for the Propagation of the Gospel in Foreign Parts, in connection with the Church of England. John Wesley laboured from 1735 to 1737 as a missionary of this body in Georgia. Its operations are chiefly devoted to the British colonies. The first mission of the Wesleyan Methodists was sent out in 1786 to the West Indies. They have now stations in India, Ceylon, China, Africa, &c. The Baptist Missionary Society, the operations of which have been crowned with remarkable success, was founded in 1792, in consequence of the exhortations of William Carey, who himself went as missionary to India. The two most distinguished missionaries belonging to this society besides Carey were Marshman and Ward. The society afterwards founded stations in China and Japan, Palestine, the West Indies, Equatorial Africa, and in some European states. The London Missionary Society was founded in 1795 by evangelical Christians of different denominations. Tahiti was the island which received the first band of missionaries (March, 1797). China and the East Indies, Madagascar, South and Central Africa, the West Indies, &c., followed. The most celebrated missionary to the Pacific was John Williams, and Moffat and Livingstone have done good work in the African field. The Scottish Missionary Society was organized at Edinburgh in 1796. Its first mission station was fixed among the Tartars, near the Black and Caspian Seas; but its operations have not been very extensive.

MISSISSIPPI.

The (English) Church Missionary Society was established by members of the Church of England in 1799, and it is one of the chief missionary societies, having missions in Africa, India, Ceylon, China, Japan, Egypt, Arabia, Persia, Palestine, North America, &c. The missionary efforts of the Established Church of Scotland date from the year 1824, when Dr. Duff was sent as its first missionary to Calcutta. On the secession of the Free Church in 1843 all the missionaries joined the latter body; but new missionaries were sent out by the Established Church, and both churches now conduct missionary operations, especially in India and South Africa. The United Presbyterians, the only other important Presbyterian body in Scotland, have a number of missionary stations in Jamaica, Kaffraria, West Africa, and India. In recent years more than £1,200,000 has been contributed annually in Britain for missionary purposes. After the missions of Great Britain the next in importance are those of the United States. The first missionary society of that country was founded in 1810 under the title of the American Board of Commissioners for Foreign Missions. The American Baptist Missionary Union was founded in 1814, the Methodist Episcopal Church Missionary Society in 1819, the Protestant Episcopal Missionary Society in 1820, the Presbyterian Board of Foreign Missions in 1833. The American missionaries have naturally done much in the conversion of the Indians of their continent, but their missions are widely spread elsewhere.

Mississipp'pi ('Great Water'), the principal river of North America, and one of the largest rivers in the world. It has its source in Lake Itasca, state of Minnesota, whence it issues about 12 feet wide and 2 feet deep; from thence it trends southward through a number of lakes and over a series of rapids until the Falls of St. Anthony are reached; below this it receives the Iowa, the Illinois, and the Missouri as tributaries, but the latter is really the main stream, having a length of 2908 miles before the rivers unite, while that of the Mississippi is only 1330 miles. From St. Louis, a little below their confluence, the Mississippi becomes a broad, rapid, muddy river, liable to overflow its banks; lower down it receives in succession the Ohio, Arkansas, and Red rivers, and it finally enters the Gulf of Mexico through a large delta with several 'passes,' some distance below New Orleans. The combined lengths

of the Missouri and Mississippi are about 4200 miles; the whole area drained by the Mississippi is 1,246,000 sq. miles; the maximum flood volume reaches 1,400,000 cubic feet per second below the Ohio; and the sediment transported to the gulf annually would make a solid block 1 mile square and 260 feet high. Above its junction with the Ohio at Cairo the river enters upon a large alluvial basin, bounded on both sides by high bluffs, and through this plain the river winds for about 1150 miles. The volume is usually smallest in October and greatest in April, and the low-lying lands are subject to terrible floodings during the spring freshets. At many places attempts have been made to secure the river within its banks and save the country from loss and suffering by building dykes, or *levees* as they are called. The sediment carried down, however, is continually raising the bed of the river, and thus breaks are frequently made in these levees. A recent method of improving the river's course, sanctioned by Congress and superintended by Captain Eads, is to construct light willow screens or dams on the shoals and at the wide places on the river where bars already exist. By this a deposit is formed which in time will act as a bank to hem in the river, while the increased volume thus obtained will help to scour out a deeper channel. The most important towns on the river banks are St. Paul, St. Louis, Cairo, Memphis, Vicksburg, Natchez, and New Orleans.

Mississippi, one of the United States of America; bounded north by Tennessee, east by Alabama, south by the Gulf of Mexico and Louisiana, and west by Louisiana and Arkansas; area, 46,810 square miles. The Mississippi winds along its western frontiers for 530 miles. Near the Gulf of Mexico the country is low and swampy, the central part is hilly and mostly prairie-land, a large part of the north-east is covered with forests, while 7000 sq. miles along the Mississippi consist of rich bottom-lands. This river receives the far larger part of the drainage. In the north the climate is tolerably mild and agreeable; but in the south, below lat. 13°, and along the swampy basin of the Mississippi, it is both extremely hot and unhealthy. In the south-east, where the pine forests extend, the soil is light and comparatively barren, but large tracts of it are well adapted for pasture. In the north-west, on the borders of the Yazoo, the soil is composed of rich black mould; and in the Mississippi bottom-

MISSISSIPPI SCHEME — MISSOURI.

lands, where it is protected from inundation by embankments or levees, it is of remarkable fertility. The staple of the state is cotton, and the other crops are chiefly Indian corn, bananas, sweet-potatoes, tobacco, and indigo; while fruit is abundant. The export trade, carried on through New Orleans and Mobile, is chiefly in lumber and cotton, while the river and coasting traffic is large. The railroads extend to about 2100 miles. The state supports a public school system with separate schools for the white and coloured races, besides a state university and other schools of high grade. The capital is Jackson. The other principal towns are Vicksburg and Natchez. The first permanent settlement of Mississippi was made by some Frenchmen in 1716 at Natchez, then called Fort Rosalie. It was admitted into the Union in 1817. Pop. in 1890, 1,289,600; of whom 747,720 were coloured.

Mississippi Scheme, a bubble scheme projected by John Law at Paris in 1717. Part of the scheme was for the colonization and development of the Mississippi valley, but combined with this there was a banking scheme and a scheme for the management of the national debt, the whole being supported by the French government. Such were the hopes raised by this undertaking that the shares originally issued at 500 livres (say £20) were sold at ten, twenty, thirty, and even forty times their value. People came from all parts of France, and even from foreign countries, in order to invest in the company, and there was a general mania of speculation. The state took advantage of the popular frenzy to issue increased quantities of paper-money, which was readily accepted by the public creditors and invested in shares of Law's company. This went on till the value of the paper-money became depreciated in value and the shares fell in price. All attempts to check the downward course failed, and when Law, the originator of the bankrupt company, fled from France in 1720 the state acknowledged itself debtor to the shareholders to the extent of 1700 million livres. See *Law, John*.

Missolonghi (mis-o-lon'gē), a town in Greece, capital of the nomarchy of Acarnania and Ætolia, near the Gulf of Patras, 22 miles west of Lepanto. It is notable for its gallant resistance in 1821 and in 1825-26 to a large Turkish army. Lord Byron died here in 1824, and a cenotaph has been erected to his memory. Pop. 6324.

Missouri (mi-sö'rē), a river of North

America, which is formed in the Rocky Mountains, in Montana, winds circuitously along the base of the mountains, then east till it reaches the western boundary of N. Dakota, and receives the Yellowstone. Here it begins to flow south-eastwards through N. and S. Dakota, then forms the eastern boundary of Nebraska, separating it from Iowa and Missouri; separates for a short distance Kansas from Missouri, then strikes eastwards across the latter state, and joins the Mississippi after a course of 2908 miles. It is navigable 2500 miles from the Mississippi. Its affluents are very numerous on both banks, but by far the most important of them are the Yellowstone, the Nebraska or Platte, and the Kansas, all from the west.

Missouri, one of the United States of America, bounded north by Iowa; east by the Mississippi, which separates it chiefly from Illinois, but partly also from Kentucky and Tennessee; south by Arkansas; and west by Kansas and Nebraska, from which it is partly separated by the Missouri and by the Indian Territory; area, 69,415 sq. miles. The surface is traversed by numerous hills and swelling ridges, but the south-east corner is almost an alluvial flat. The most important rivers are the Mississippi and the Missouri, the latter of which crosses the state from west to east, and has several navigable tributaries—the Lamine, Osage, Gasconade, the Grand, and Charlton. The state is rich in minerals; iron and lead are produced, the latter in large quantities; and coal was mined to the extent of 2,567,823 tons in 1889. Much of the soil is fertile, and there is a great deal of valuable timber. The crops of Indian corn, oats, and wheat are unusually large; flax, hemp, cotton, and tobacco also form important staples; and immense numbers of cattle, sheep, and swine are raised. The chief industries, which include flour-milling, iron-working, and pork-packing, have their main seat at St. Louis. The numerous navigable streams afford unwonted facilities for traffic, and there are about 6000 miles of railways open in the state. The climate is generally healthy, but subject to extremes. Education has been well provided for both by the state and by the different religious bodies. Besides the state university there are other universities and colleges (medical and other), normal schools, school of agriculture, school of mining and metallurgy, &c. Jefferson City is the capital, but St. Louis is the commercial metropolis and largest city, and there are

many others more populous than Jefferson. Missouri formed at one time part of Louisiana. It was admitted into the Union in 1821. Pop. 1890, 2,679,184; 154,131 colored.

Missouri Compromise, an act of the American Congress, passed in 1820, by which Missouri was admitted into the Union as a slave-holding state, but which enacted that slavery should never be established in any future-formed state north of lat. $36^{\circ} 30'$.

Mistas'sini, a large lake in the north-east territory of Canada, as yet but imperfectly known, but reputed to be of large size. With Little Mistassini Lake, which is close beside it, it is an expansion of Rupert River, which flows into James Bay.

Mistletoe, the *Viscum album* of botanists, nat. order Loranthaceæ, a European plant growing parasitically on various trees, and celebrated on account of the religious purposes to which it was consecrated by the ancient Celtic nations of Europe, being held in great veneration by the Druids, particularly when it was found growing on the oak. It is a small shrub, with sessile, oblong, entire, somewhat leathery leaves, and small, yellowish-green flowers, the whole forming a pendent bush, covered in winter with small white berries, which contain a glutinous substance. It is common enough on certain species of trees, such as apple and pear trees, hawthorn, maple, lime, and other similar trees, but is very seldom found on the oak. Its roots penetrate into the substance of the tree on which it grows, and latterly it kills the branch supporting it. Traces of the old superstitious regard for the mistletoe still remain in Germany and England, as kissing under it at Christmas.

Mistral, a violent cold north-west wind experienced in Provence and other neighbouring districts bordering on the Mediterranean, and destroying crops, fruit, blossom, &c. It blows with greatest violence in autumn, winter, and early spring.

Mistral, FREDERIX, modern Provençal poet, born in 1830. His first important work was the epic poem *Mirèio* (popular as the opera *Mireille*, with music by Gounod), which appeared in 1859. Another epic, *Calendou*, came out in 1867; a volume of poems, *Lis Iselo d'Or*, in 1876; *Lou Trésor dou Felibrige*, a dictionary of modern Provençal, in 1878-86. Mistral has devoted much labour to the revival of Provençal literature.

Mitau. See *Mittau*.

Mitchel, JOHN, Irish Nationalist, born in county Derry 1815, died 1875. He was

one of the leaders of the Young Ireland party, was banished to Australia in 1848, escaped in 1853, and became a journalist in America. In 1874 he was returned as member of parliament for Tipperary, but, being disqualified, never took his seat.

Mitchel, ORMSBY M., astronomer, born in Morganfield, Ky., in 1809. He was Professor of Astronomy in Cincinnati College from 1836 to 1841, building its large observatory. His observations of stars, nebulae, &c., have been numerous. In the civil war he attained the rank of major-general of volunteers. He died in 1862.

Mitchell, DONALD GRANT, author, born in Norwich, Conn., 1822. "Reveries of a Bachelor," perhaps his most popular book, appeared in 1850. Beside other works he has contributed to magazines and given lectures on literature and agriculture.

Mite, a name common to numerous small, in some cases microscopic, animals, of the class Arachnida (spiders) and division Acarida. The cheese-mite is the *Acarus domesticus*, the flour-mite *A. farinæ*, the sugar-mite *A. saccharinus*.

Mitford, MARY RUSSELL, English authoress, daughter of a physician at Alresford, Hampshire, and born there 1786, died 1855. Her best-known work is *Our Village*, a series of prose sketches descriptive of English country life and scenery, drawn from the village of Three Mile Cross, near Reading. A subsequent work, *Bedford Regis*, or *Sketches of a Country Town*, was nearly equally popular. Miss Mitford likewise made several attempts as a dramatist, and three of her dramas, *Julian*, *The Foscari*, and *Rienzi*, were produced on the stage with some success. Her last works were her interesting *Recollections of my Literary Life*; and *Atherton*, a novel in three vols., published in 1854.

Mitford, WILLIAM, English historian, born 1744, died 1827. He studied at Queen's College, Oxford, and entered the Middle Temple, but early quitted the profession of law, and obtained a commission in the Hampshire militia, of which he became colonel. His early fondness for Greece led him to undertake a *History of Greece*. The first volume appeared in 1784; the fifth and last, bringing the narrative down to the death of Alexander the Great, was published in 1818. Despite its strong anti-democratic prejudices, until the appearance of the works of Thirlwall and Grote his history was considered the standard. He held the pro-

fessorship of ancient history in the Royal Academy, and sat in parliament from 1785 till 1818.

Mithras, the Mitra of the Rig Veda, the sun, or the genius of the sun, with the Persians, which was worshipped as a deity at a later period also in Rome. The cultus of Mithras found its way into all parts of Europe visited by the Roman legions. In Germany many tokens of its former existence are still to be found.

Mithrida'tes, or MITHRADA'TES, king of Pontus, on the southern shore of the Black Sea, surnamed the *Great*. His father was murdered B.C. 120, and Mithridates ascended the throne at the age of thirteen. Soon after attaining his majority he commenced his career of conquest, which made him master of nearly all Asia Minor, besides Greece, and brought him into conflict with Rome. In B.C. 88, Sulla led a Roman army into Greece, and restored the Roman power in that country. For four years Mithridates disputed possession of Asia, but was at last compelled to succumb, B.C. 84, and to confine himself to his hereditary dominions, though he soon again began the war. After the death of Sulla, which occurred in B.C. 78, Mithridates levied another army with a determination to expel the Romans from Asia. Being defeated by Lucullus, who was appointed consul B.C. 74, he was followed by the victorious Romans into his own states, and driven to seek a refuge in Armenia, then ruled by Tigranes, who refused to deliver him up. Here Mithridates raised a third great army, and in B.C. 67 completely defeated the Romans under Triarius, the lieutenant of Lucullus, who had been recalled; and, following up his success, rapidly recovered the larger part of his dominions. The Romans now invested Pompey with absolute power in the East, and by him, in B.C. 66, the forces of Mithridates were completely routed near the Euphrates. The king retired to Bosphorus (the Crinea), where his troops, headed by his son Pharnaces, broke out in mutiny, and Mithridates killed himself, B.C. 63.

Mitla, a ruined city of Mexico, 15 miles S.E. of Oajaca, with extensive remains of a prehistoric race.

Mitrailleuse (mit-rà-yen-z), a breech-loading machine-gun introduced in France shortly before the Franco-German war of 1870-71. It consists of a number of rifled barrels, generally thirty-seven, either bound together or bored out of the solid, and

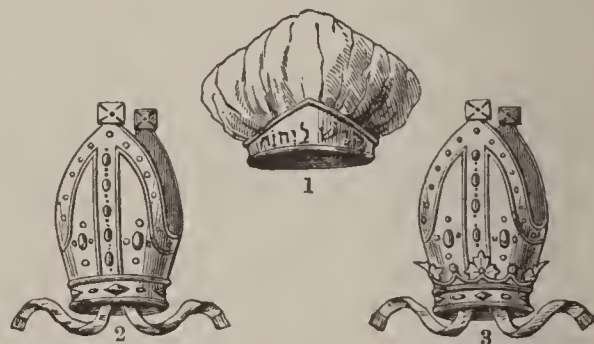
mounted on the same principle as an ordinary field-piece. Plungers and springs are fixed in connection with the breech ends of the barrels that they may be fired in suc-



Mitrailleuse.

cession with great rapidity, so as to concentrate a deadly fire upon any desired point.

Mitre, a sacerdotal ornament worn on the head by bishops and archbishops (including the pope), cardinals, and in some instances by abbots, upon solemn occasions, or by a Jewish high-priest. It is a sort of cap pointed and cleft at the top, this form



1, Mitre of Jewish High-priest. 2, Mitre of English Bishop. 3, Mitre of English Archbishop.

being supposed to symbolize the 'cloven tongues' of the day of Pentecost. The pope has four mitres, which are more or less rich according to the solemnity of the feast-days on which they are to be worn. The English archbishops have a ducal coronet round their mitres.

Mitre (*mitra*), a name of many mollusca inhabiting a small and pretty turreted shell. The shells exhibit a great variety of patterns, and are variegated with every kind of hue. They abound in the seas of hot climates.

Mittau (mit'ou), or MITAU, a town in Russia, capital of the government of Courland, in a low, flat, and sandy district on the Aa, 25 miles south-west of Riga. Pop. 26,600.

Mittimus, in law, a warrant of commitment to prison; also a writ for removing records from one court to another.

Mittweida (mit'vī-dā), a town of Saxony, on the Zschoppau, 36 miles south-east of Leipzig. It has extensive manufactures of textile fabrics. Pop. 9461.

Mitylene (mit-i-lē'nē). See *Lesbos*.

Mivart, ST. GEORGE, F.R.S., naturalist and scientist, born 1827; educated at Harrow; King's College, London; and the Roman Catholic College at Oscott. He was called to the bar in 1851, but has devoted himself chiefly to science. He has been professor of biology at the Roman Catholic College at Kensington, secretary to the Linnæan Society, and vice-president of the Zoological Society. Among his works are *The Genesis of Species* (combating the Darwinian 'natural selection'), *Man and Apes*, *Contemporary Evolution*, *The Cat*, *Nature and Thought*, &c.

Mizzen, a term applied to the aftermost mast of a three-masted vessel, that is the one nearest the stern. In a four-master the jigger-mast comes between it and the stern.

Mjösen. See *Miösen*.

Mnemonics (nē-mon'iks), the art of assisting the memory by methods of association. Many devices have been devised for assisting in the recollection of facts, dates, numbers, or the like, but they all go on the principle of associating the thing to be remembered with something else which can be more easily recollected. The art dates from a very early period, Simonides the Greek poet (500 B.C.) having devised a system. All the systems are more or less arbitrary, and their chief value would seem to lie in the exercise which they give the memory, thereby strengthening it. Memorial lines and verses have been extensively used as aids to memory.

Mnemosyne (nē-mos'i-nē; Greek, 'Memory'), in the Greek mythology, daughter of Urānus (Heaven) and Gaia (Earth), and by Zeus the mother of the nine Muses.

Moa, an extinct bird of New Zealand. See *Dinornis*.

Moab, the land of the Moabites, a tribe dwelling in the mountainous region east of the Dead Sea. According to the Mosaic account (Gen. xix. 30) the Moabites were descended from Moab, the son of Lot by his eldest daughter. In the time of the judges they were for eighteen years masters of the Hebrews, but in the time of David were rendered tributaries to them. After the Babylonish captivity they lost their separate national existence.

Moabite Stone, a monument of black

basaltic granite about 3 feet 5 inches high and 1 foot 9 inches wide and thick, with rounded top but square base, on which there is an inscription of thirty-four lines in Hebrew-Phœnician characters, discovered in 1868 at Dhiban in the ancient Moab. It was unfortunately broken by the natives, but almost the whole of the inscription has been recovered from the broken pieces. The inscription dates about 900 B.C., and is the oldest known in the Hebrew-Phœnician form of writing. It was erected by Mesha, king of Moab, and is a record of his wars with Omri, king of Israel, and his successors.

Moal'lakat. See *Arabian Literature*.

Moa'ria, the hypothetical South Pacific continent of which Australia and New Zealand are the largest fragments. Its assumed existence is used to account for peculiarities in the present distribution of man and other animals and plants.

Moat, or DITCH, in fortification, a deep trench dug round the rampart of a castle or other fortified place, and often filled with water.

Mobangi, or UBANGI, a river of Central South Africa, a tributary on the right bank of the Congo, which it enters nearly opposite Equator Station, lat. 0° 30'; navigable for upwards of 400 miles, but there are difficult rapids in 40° 20' N.

Moberly, Randolph co., Mo., 146 m. W. of St. Louis, has railroad machine and car shops. Pop. 1890, 8215.

Mobile (mo-bēl'), a city and port of the United States, in Alabama, on the right bank of the Mobile, at its entrance into Mobile Bay. (For situation see plan on next page.) It has regular streets and several fine public buildings; is well supplied with water, and generally healthy, though at times visited by yellow fever. It has an important export trade, and next to New Orleans is one of the greatest cotton marts of the South. A channel is maintained by dredging to allow the approach of tolerably large vessels to the harbour; but a new and deeper harbour is to be constructed on Dauphine Island (see plan), which will be connected with Mobile by rail. Pop. 1890, 31,076.

Mobile, a river of the United States, in Alabama, formed by the union of the Alabama and the Tombigbee, which unite about 45 miles above the town of Mobile. It enters Mobile Bay by two mouths.

Mobile, GARDE. See *Garde Nationale Mobile*.

MOBILE BAY — MODERATOR.

Mobile Bay, an estuary of the Gulf of Mexico, from 8 to 18 miles wide, and about



35 miles in length, N. to S., the general depth being 12 to 14 feet.

Mobilier. See *Crédit Mobilier*.

Mobilization, a military term, being the act of putting troops into a state of readiness for active service. The mobilization of an army or a corps includes not only the calling in of the reserve and the men on furlough, but the organizing of the staff, as well as the commissariat, medical, artillery, and transport services, the accumulating of provisions, munitions, and the like.

Moc'casin, a shoe or cover for the feet, made of deer-skin or other soft leather, without a stiff sole, and ornamented on the upper part; the customary shoe worn by the native American Indians.

Moc'casin Snake, a very venomous serpent (*Cenchrus* or *Ancistrædon piscivorus*), frequenting swamps in many of the warmer parts of America. It is about two feet in length, dark-brown above, and gray below.

Mocha (mok'a), or **MOKHA**, an Arabian fortified seaport, on the Red Sea, about 40 miles within the Strait of Báb-el-Mandeb, the chief port and emporium in the dominions of the Imám of Sana. It owes its importance to the coffee trade. Pop. 5000.

Mocha-stone, a variety of dendritic agate, containing dark outlines like vegetable filaments, and called also *Moss-agate*.

Mocking-bird, an American bird of the

thrush family (*Mimus polyglottus*). It is of an ashy-brown colour above, lighter below, and is much sought for on account of its wonderful faculty of imitating the cries or notes of almost every species of animal, as well as many noises that are produced artificially. Its own notes form a beautiful and varied strain. It inhabits North America chiefly, being a constant resident of the Southern States, and but rare and migratory in the northern parts of the continent. It is also found in the West Indian Islands and in Brazil.

Mode, in music, a species of scale of which modern musicians recognize only two, the *major* and the *minor modes*. See *Major*, *Gregorian Tones*.

Mod'ena (anciently, *Mutina*), a town of North Italy, capital of the province of its own name, situated in a somewhat low but fertile plain, between the Secchia and the Panaro. It is built with great regularity, and has spacious streets, often with arcades on either side. The most remarkable edifices and establishments are the cathedral, a fine specimen of the Lombard style, with interesting sculptures and monuments; a fine campanile; several fine churches; the ducal, now the royal palace, a splendid structure; the university; the public library, of 100,000 vols.; &c. The manufactures and trade are unimportant. Pop. 31,053.—Modena was formerly an independent duchy bordering on Tuscany, Lucca, Bologna, Mantua, and Parma; area, 2340 square miles; pop. over 600,000. It is now divided into the provinces of Modena (966 square miles; pop. 289,247), Massa-Carrara, and Reggio. Previous to 1859 Modena was governed by a branch of the house of Este.

Moderates, a party in the Church of Scotland which arose early in the 18th century, and claimed the character of moderation in doctrine, discipline, and church government. It differed from the Evangelical party more particularly on the question of patronage. The difference of opinion between the two parties led to the Disruption in the Church of Scotland in 1843.

Moderations, at Oxford University, the first public examinations for degrees held before the moderators. See next article.

Moderator, the person who presides at a meeting or disputation: now used chiefly as the title of the chairman or president of meetings or courts in the Presbyterian churches. In the Universities of Cambridge and Oxford, public officers appointed

to superintend the examinations for honours and degrees are so called.

Moderator-lamp, a lamp for burning oil, especially vegetable oil, in which the oil is forced through a tube up towards the wick by a piston pressing on its surface, to which a downward impulse is communicated by means of a spiral spring situated between it and the top of the barrel or body of the lamp. The passage of the oil up the tube is so regulated, or *moderated*, by an ingenious internal arrangement of the tube, that its flow is uniform; hence the name. See *Lamp*.

Mod'ica, a town of Sicily, in the prov. of and 31 miles w.s.w. of Syracuse. It exports grain, oil, wine, cheese, &c. Pop. 38,390.

Modillion, in architecture, a block carved into the form of an enriched bracket, used under the corona in the cornice of the Corinthian and Composite orders, and occasionally also of the Roman Ionic.

Modocs, an American Indian tribe originally settled on the s. shore of Klamath Lake, California. From 1847 till 1873 they were in continual conflict with the whites. Only a small remnant of them now exists in the Indian Territory and in Oregon.

Modugno (mo-dun'yō), a town of South Italy, province Bari. Pop. 8525.

Modulation, in music, the transition from one key to another. The simplest form is the change from a given key to one nearly related to it, namely, its fifth (dominant), fourth (subdominant), its relative minor, or the relative minor of its fifth. Modulation is generally resorted to in compositions of some length, for the purpose of catching and pleasing the ear with a fresh succession of chords.

Möen (meu'en), an island belonging to Denmark, on the south-east of Seeland; area, about 80 square miles. Its highest point above the sea is 460 feet. It is very fertile and picturesque. Pop. 13,500.

Mœris, an ancient lake basin in Egypt, formerly identified with Lake Birket-el-Kurûn in the Fayûm. Lake Mœris, long since dried up, lay further to the s.e., and was probably an artificial excavation for the purpose of receiving the superabundant water during the inundation of the Nile, and distributing its contents over the fields when the overflow was insufficient. It is said to have been 450 miles in circumference and about 300 feet deep. See *Raïan Mœris*.

Mo'ero, a lake of Central S. Africa, lying

south-west of Tanganyika, and drained by the Luapula. It was discovered by Livingstone.

Mœsia, in ancient geography, a country lying north of Thrace and Macedonia, and south of the Danube, corresponding to the modern Servia and Bulgaria.

Mæso-Gothic, the language of the Mæso-Goths, or Goths of Mœsia.

Mæso-Goths, a tribe of Goths who settled in Mœsia on the Lower Danube, and there devoted themselves to agriculture, under the protection of the Roman emperors. See *Goths*.

Moffat, a watering-place of Scotland, in the county of Dumfries, pleasantly situated in an amphitheatre of rounded hills in the valley of the Annan. It has mineral springs, a hydropathic establishment, assembly rooms, &c., and is much frequented by visitors in summer. Pop. 2161.

Moffat, ROBERT, Scottish missionary traveller, born 1795, died 1883. He began missionary work in S. Africa in 1813, and in 1818 made a long exploratory tour in the Damara Country. In 1819 he married Mary Smith at Cape Town, who henceforth was the constant companion of his labours. During a visit to Britain in 1842 he published an account of his travels, and a translation of the New Testament and Psalms in the Bechuana language. He finally returned to England in 1870, and his wife died the following year. He received the degree of D.D. from Edinburgh University, and in 1873 he was presented with a public testimonial (£5800). One of his daughters became the wife of Dr. Livingstone.

Mogador', a seaport of Morocco, about 110 miles west by south of the city of Morocco. It is fortified, and has a good harbour. The mosques are some of them splendid specimens of architecture. The exports are wool, gum, wax, hides, skins, honey, ostrich feathers, &c. Pop. about 15,000.

Mogul', a word which is the same as *Mongol*, but is applied particularly to the sovereigns of Mongolian origin, called Great or Grand Moguls, descendants of Tamerlane, who ruled in India from the 16th century downwards, the first of them being the conqueror Baber. See *India, History of*.

Mohács (mo-häch'), a town of Hungary, on the Danube, 25 miles e.s.e. of Fünfkirchen. It carries on an active trade, being a station for steamers plying on the Danube. Here Solyman the Magnificent

defeated the Hungarians in 1526, and the Turks were defeated by the Duke of Lorraine in 1687. Pop. 12,385.

Mohair, the hair of the Angora goat of Asia Minor. It is soft and fine as silk, of a silvery whiteness, and is manufactured into camlets, plush, shawls, braidings, and other trimmings, &c. In France it is used in the manufacture of a kind of lace.

Moham'med, MAHOM'ET, or more correctly MUHAMMAD, the founder of Islamism, was an Arabian by birth, of the tribe of the Koreish, and was born of poor parents in 571 A.D., in Mecca. His parents died early, and he was brought up by his uncle Abu Talib, who trained him to commerce, and with whom he journeyed through Arabia and Syria. In his twenty-fifth year his uncle recommended him as agent to a rich widow, named Chadidja, and he acquitted himself so much to her satisfaction that she married him, and thus placed him in easy circumstances. She was fifteen years older than he, but he lived with her in happy and faithful wedlock. He seems to have had from his youth a propensity to religious contemplation, for he was every year accustomed, in the month Ramadhan, to retire to a cave in Mount Hara, near Mecca, and dwell there in solitude. Mohammed began his mission in the fortieth year of his age by announcing his apostleship to his own family. His wife was one of the first to believe in him, and among other members of his family who acknowledged his mission was his cousin Ali, the son of Abu Talib. Of great importance was the accession of Abu Bekr, a man of estimable character, who stood in high respect, and persuaded ten of the most considerable citizens of Mecca to join the believers in the new apostle. They were all instructed by Mohammed in the doctrines of *Islam*, as the new religion was styled, which were promulgated as the gradual revelations of the divine will, through the angel Gabriel, and were collected in the Koran (which see). After three years Mohammed made a more public announcement of his doctrine, but his followers were few for years. In 621 Mohammed lost his wife, and the death of Abu Talib took place about the same time. Deprived of their assistance he was compelled to retire, for a time, to the city of Taif. On the other hand, he was readily received by the pilgrims who visited the Kaaba (which see), and gained numerous adherents among the families in the neighbourhood. Moham-

med now adopted the resolution of encountering his enemies with force. Only the more exasperated at this they formed a conspiracy to murder him; warned of the imminent danger, he left Mecca, accompanied by Abu Bekr alone, and concealed himself in a cave not far distant. Here he spent three days undiscovered, after which he arrived safely at Medina, but not without danger (A.D. 622). This event, from which the Mohammedans commence their era, is known under the name of the Hejra, which signifies *flight*. In Medina Mohammed met with the most honourable reception; thither he was followed by many of his adherents. He now assumed the sacerdotal and regal dignity, married Ayesha, daughter of Abu Bekr, and as the number of the faithful continued to increase, declared his resolution to propagate his doctrines with the sword. In the battle of Bedr (623), the first of the long series of battles by which Islamism was established over a large portion of the earth, he defeated Abu Sofian, the chief of the Koreishites. He in turn was defeated by them at Ohod, near Medina, soon after, and in 625 they unsuccessfully besieged Medina, and a truce of ten years was agreed on. Wars with the Jewish tribes followed, many Arabian tribes submitted themselves, and in 630 he took possession of Mecca as prince and prophet. The idols of the Kaaba were demolished, but the sacred touch of the prophet made the black stone again the object of the deepest veneration, and the magnet that attracts hosts of pilgrims to the holy city of Mecca. The whole of Arabia was soon after conquered, and a summons to embrace the new revelation of the divine law was sent to the Emperor Heraclius at Constantinople, the King of Persia, and the King of Abyssinia. Preparations for the conquest of Syria and for war with the Roman Empire were begun, when Mohammed died at Medina (632). His body was buried in the house of Ayesha, where he died, and which afterwards became part of the adjoining mosque, and a place of pilgrimage for the faithful in all time to come. Of all his wives, the first alone bore him children, of whom only his daughter Fatima, wife of Ali, survived him. There is no doubt that Mohammed was a man of extraordinary insight and deep reflection. Though without book-learning, he had a deep knowledge of man, was familiar with Bible narratives and eastern legends, and possessed a grasp of the eternal ground of

all religion, though tinged and modified by his vivid poetic imagination. See *Koran*, *Mohammedanism*.

Mohammed, the name of four Ottoman sultans. See *Ottoman Empire*.

Mohammed Ahmed. See *Mahdi*.

Mohammed Ali. See *Mehemet Ali*.

Mohammedanism, the name commonly given in Christian countries to the creed established by Mohammed. His followers call their creed *Islam* (entire submission to the decrees of God), and their common formula of faith is, 'There is no god but Allah, and Mohammed is his prophet.' The dogmatic or theoretical part of Mohammedanism embraces the following points:—1. Belief in God, who is without beginning or end, the sole Creator and Lord of the universe, having absolute power, knowledge, glory, and perfection. 2. Belief in his angels, who are impeccable beings, created of light. 3. Belief in good and evil Jinn (genii), who are created of smokeless fire, and are subject to death. 4. Belief in the Holy Scriptures, which are his uncreated word revealed to the prophets. Of these there now exist, but in a greatly corrupted form, the Pentateuch, the Psalms, and the Gospels; and in an uncorrupted and incorruptible state the Koran, which abrogates and surpasses all preceding revelations. (See *Koran*.) 5. Belief in God's prophets and apostles, the most distinguished of whom are Adam, Noah, Abraham, Moses, Jesus, and Mohammed. Mohammed is the greatest of them all, the last of the prophets and the most excellent of the creatures of God. 6. Belief in a general resurrection and final judgment, and in future rewards and punishments, chiefly of a physical nature. 7. The belief, even to the extent of fatalism, of God's absolute foreknowledge and predestination of all events both good and evil.

The practical part of Mohammedanism inculcates certain observances or duties, of which four are most important. The first is prayer, including preparatory purifications. Prayer must be engaged in at five stated periods each day. On each of these occasions the Moslem has to offer up certain prayers held to be ordained by God, and others ordained by his prophet. During prayer it is necessary that the face of the worshipper be turned towards the kebla, that is, in the direction of Mecca. Prayers may be said in any clean place, but on Friday they must be said in the mosque. Second in importance to prayer stands the

duty of giving alms. Next comes the duty of fasting. The Moslem must abstain from eating and drinking, and from every indulgence of the senses, every day during the month of Ramadhan, from the first appearance of daybreak until sunset, unless physically incapacitated. The fourth paramount religious duty of the Moslem is the performance at least once in his life, if possible, of the pilgrimage (el-Hadj) to Mecca, after which he becomes a Hadji. Circumcision is general among Mohammedans, but is not absolutely obligatory. The distinctions of clean and unclean meats are nearly the same as in the Mosaic code. Wine and all intoxicating liquors are strictly forbidden. Music, games of chance, and usury are condemned. Images and pictures of living creatures are contrary to law. Charity, probity in all transactions, veracity (except in a few cases), and modesty, are indispensable virtues. After Mohammed's death Abu Bekr, his father-in-law, became his successor, but disputes immediately arose, a party holding that Ali, the son-in-law of Mohammed, was by right entitled to be his immediate successor. This led to the division of the Mohammedans into the two sects known as Shiites and Sunnites. The former, the believers in the right of Ali to be considered the first successor, constitute at present the majority of the Mussulmans of Persia and India; the latter, considered as the orthodox Mohammedans, are dominant in the Ottoman Empire, Arabia, Turkestan, and Africa. The total Mohammedan population of the world is estimated at fully 215,000,000. See *Caliph*, *Shiites*, *Sunnites*, &c.

Moham'mera, a town of Western Persia, prov. Khuzistan, at the junction of the Karun with the Shatt-el-Arab. Pop. 12,000 to 15,000.

Mo'hawk, a river of the United States, the principal tributary of the Hudson in the state of New York; length about 135 miles. It affords abundant water-power, and flows through beautiful scenery.

Mo'hawks, a tribe of North American Indians, belonging to the confederacy of the Five (afterwards Six) Nations. (See *Iroquois*.) They originally inhabited the valley of the Mohawk river. With the rest of the confederacy they adhered to the British interest during the war of the revolution, and left the country on its termination for Canada, where lands were assigned them on the Grand River. Their language has been committed to writing.

Mo'hicans, or MOHEGANS, a tribe of Indians formerly occupying the country now forming the south-western parts of New England and that portion of New York state east of the Hudson.

Mo'hilev, a town in Russia, capital of a government of the same name, on both banks of the Dnieper, 212 miles w.s.w. of Moscow. It has spacious streets and a large octagonal square occupied by the principal buildings, among others the palace of the Greek archbishop and the bazaar. The staple manufacture is tobacco; and the trade with Riga, Memel, Dantzic, and Odessa, chiefly in leather, wax, honey, potash, oil, and grain, is very extensive. Pop. 40,536. —The government has an area of about 18,545 square miles. Pop. 1,234,211. —There is another Mohilev in the government of Podolsk, on the left bank of the Dniester, 60 miles E.S.E. of Kamenetz, with a pop. of 18,129.

Mohilla. See *Comoro Islands*.

Mohur, an Indian gold coin, value fifteen rupees.

Mohurram, or MUHARRAM, the first month of the Mohammedan year.

Moidore (from the Portuguese, *moeda d'ouro*, literally, coin of gold), a gold coin formerly used in Portugal (from 1690–1722), of the value of 4800 reis, or about \$6.75.

Moir, DAVID MACBETH, better known by his pseudonym of *Delta*, poet and miscellaneous writer, born in Musselburgh, Scotland, 1798. He adopted the medical profession, as a practitioner of which in his native town the whole of his life was spent. He early showed a turn for literary composition, both in prose and verse, and became a frequent contributor, first to *Constable's* and afterwards to *Blackwood's Magazine*, where his more serious effusions were subscribed by a Δ . In the latter magazine most of his writings in prose and verse, including the inimitable *Autobiography of Mansie Waugh*, Tailor in Dalkeith, first appeared. He died in 1851.

Moiré (mwà-rā), the French name given to silks figured by the process called watering. The silks for this purpose, though made in the same way as ordinary silks, are of double width, and must be of a stout substantial make. They are folded and subjected to an enormous pressure, of from 60 to 100 tons, generally in a hydraulic machine, and the air in trying to escape drives before it the small quantity of mois-

ture that is used, and hence is effected the permanent marking called watering, which is for the most part in curious waved lines. The finest kinds of watered silks are known as *moirés antiques*. Woollen fabrics to which the same process has been applied are called *moreen*.

Moirée Métallique, tin-plate showing a crystallized surface through the action of acids; also, iron-plate coated with tin, and having the coating more or less removed by acids, so as to give it a variety of shades.

Moissac (mwàs-âk), a town of France, dep. Tarn-et-Garonne, on the Tarn. Pop. 5675.

Mojanga, a seaport on the north-west coast of Madagascar.

Mokanna, AL, HAKEM IBN HASHEM, styled the *Veiled Prophet*, a Mohammedan impostor of Persia in the 8th century. He attributed to himself divine powers, and gained many followers, so that at last the caliph was compelled to send an armed force against him. He retired to a fortress in Transoxiana, where he first poisoned and burned his family, and then burned himself. His followers continued to pay him divine honours after his death. He is the hero of Moore's *Veiled Prophet of Khorassan*.

Mola-di-Bari, a seaport of S. Italy, in the province and 12 miles E.S.E. from Bari, on the Adriatic. Pop. 12,435.

Molar Teeth. See *Teeth*.

Molasse, a soft greenish sandstone which occupies the country between the Alps and the Jura.

Molasses, the uncrystallized syrup produced in the manufacture of sugar. It differs from treacle, as molasses comes from sugar in the process of making, treacle in the process of refining.

Mold, a parliamentary borough of North Wales, in Flintshire, 6 miles south of Flint and 12 west of Chester. There are collieries, lead-mines, mineral-oil works, limestone quarries, and potteries in the neighbourhood. It is one of the Flint district of parliamentary boroughs. Pop. 5055.

Moldau, the chief river of Bohemia, which, after passing through Prague, joins the Elbe; length, 260 miles.

Moldavia. See *Roumania*.

Mole, a name given to insectivorous animals of the genus *Talpa*, family *Talpidae*, which, in search of worms or insect larvæ, form burrows just under the surface of the ground, throwing up the excavated soil into a little ridge or into little hills. The com-

mon mole (*T. europea*) is found all over Europe, except in the extreme south and north. It is from 5 to 6 inches long; its head is large, without any external ears; and its eyes are very minute, and concealed by its fur, which is short and soft. Its fore-legs are very short and strong, and its snout slender, strong, and tendinous. It is the only British representative of the family. Another species (*T. caeca*, or blind mole) is found in the south of Europe. It has its name from its eye being always covered by its eyelid. The Cape mole, or changeable mole (*Chrysochloris capensis*), is remarkable as being the only mammal that exhibits the splendid metallic reflection which is thrown from the feathers of many birds. The 'star-nosed moles' of North America (*Condylura macrura*) are so named from the star or fringe-like arrangement of the nasal cartilages. The shrew moles (*Scalops*) of North America are more properly included among the shrews.

Mole, a mound or massive work formed of large stones laid in the sea so as to partially inclose and shelter a harbour or anchorage.

Mole-cricket, a name given to certain insects from the peculiar similarity of the anterior extremities of the species, and from the resemblance in their habits, to those of the mole. The best-known species (*Gryllotalpa borealis*), common in U. States, is about $1\frac{1}{2}$ inch long and of a brown colour. In making its burrows it cuts through the roots of plants and commits great devastation in gardens. A larger species is found in South America.

Molecule, the smallest quantity of any elementary substance or compound which is capable of existing in a separate form. It differs from *atom*, which is not perceived, but conceived, inasmuch as it is always a portion of some aggregate of atoms. *Molecular attraction* is that species of attraction which operates upon the molecules or particles of a body. Cohesion and chemical affinity are instances of molecular attraction. See *Chemistry*.

Mole-rat, a name given to rodents of the genus *Spalax*, family Spalacidae. They are dumpish stout-bodied rodents, with short strong limbs, a short tail or scarcely any, and minute or rudimentary eyes and ears. They make tunnels and throw up hillocks like the mole, but their food appears to consist wholly of vegetable substances. All the species belong to the Old World, *S. typh-*

lus inhabiting the South of Russia and some parts of Asia.

Moleskin, a strong twilled cotton fabric (fustian), cropped or shorn before dyeing; much used for workmen's clothing. So called from its being soft, like the skin of a mole.

Molfetta, an Italian seaport on the Adriatic, on the railway from Ancona to Brindisi, 15 miles W.N.W. of the city of Bari. It has a cathedral and several other churches and a college; manufactures of linen and saltpetre; a harbour, well sheltered except on the north; and a considerable trade. Pop. 30,056.

Molière (mol-yār), the assumed name of JEAN BAPTISTE POQUELIN, French comic dramatist, born at Paris in 1622. His father was a tradesman connected with the court, and he received a good education. He studied law, but gave it up for the career of an actor, assuming in this profession the name of Molière. After obtaining great success in the provinces he settled in Paris in 1658, having previously produced his two comedies *L'Étourdi* and *Le Dépit Amoureux*. In the following year his reputation was greatly advanced by the production of the *Précieuses Ridicules*, a delicate satire on the prevailing affectation of the character of *bcl esprit*, on the pedantry of learned females, and on affectation in language, thoughts, and dress. It produced a general reform when it was brought forward in Paris. Continuing to produce new plays, and performing the chief comic parts himself, he became a great favourite both with the court and the people, though his enemies, rival actors and authors, were numerous. Louis XIV. was so well pleased with the performances of Molière's company that he made it specially the royal company, and gave its director a pension. In 1662 Molière made an ill-assorted marriage with Armande Béjart, upwards of twenty years younger than himself, a union that embittered the latter part of his life. Among his works other than those mentioned may be noted: *L'École des Maris*, *L'École des Femmes*, *Le Mariage Forcé*, *Don Juan*, *Le Misanthrope*, *Le Médecin Malgré lui*, *Le Tartufe*, *L'Avare*, *George Dandin*, *Les Fourberies de Scapin*, *Le Bourgeois Gentilhomme*, *Le Malade Imaginaire*, &c. Molière died in 1673 of an apoplectic stroke, a few hours after playing in the latter. As a player he was unsurpassed in high comic parts; and in the literature of comedy he bears the

greatest name among the moderns after Shakspeare. He borrowed freely from Latin, Spanish, and Italian writers, but whatever materials he appropriated he so treated them as to make the result entirely his own and original. The Archbishop of Paris at first refused him burial as being an actor and a reviler of the clergy; but the king himself insisted on it.

Moli'na, LUIS, a Jesuit and professor of theology at the Portuguese university of Evora, was born at Cuenca, in New Castile, in 1535, and died in 1601 at Madrid. He has become known by his theory of grace. In order to reconcile man's free-will with the Augustinian doctrine of grace, he published a work in which he undertook to reconcile the free-will of man with the foreknowledge of God and predestination. It caused lengthened discussion, and passed subsequently into the Jansenist controversy. Molina was attacked by Pascal in the Provincial Letters.

Moline (mo-lēn'), a busy manufacturing town of the United States, in Illinois, on the left bank of the Mississippi. Pop. 12,000.

Mol'inism, the doctrines of the Molinists or followers of Luis Molina, somewhat resembling the tenets of the Arminians.

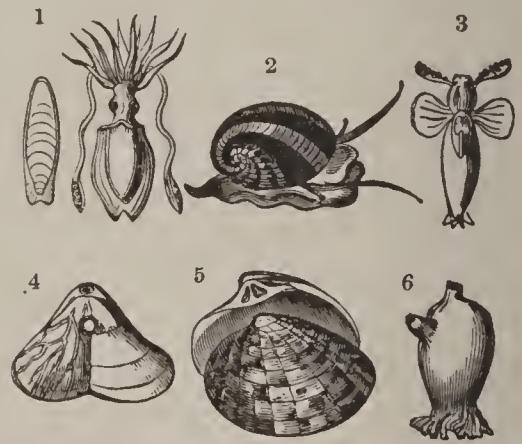
Moli'nos, MIGUEL, a Spanish mystic and theologian, born 1627, died 1696. In 1675 he published the Spiritual Guide, an ascetical treatise, which promulgated the new religious doctrine known as *Quietism*. In 1685 he was cited before the Holy Office, and in 1687 the Inquisition condemned his works. He spent the rest of his days as a prisoner in a convent of the Dominicans.

Mollah, an honorary title accorded to any one in Turkey who has acquired respect from purity of life, or who exercises functions relating to religion or the sacred or canon law. The title is not conferred by any special authority, but springs spontaneously from public respect. It is nearly equivalent to *master*, *excellency*, in English.

Mollen'do, a small seaport on the coast of Peru, dep. Arequipa, with a considerable trade. Pop. 1500.

Mollus'ca, an animal sub-kingdom, comprising those soft-bodied animals known as slugs, snails, limpets, oysters, cockles, &c. In some the body is naked and unprotected, in others it is inclosed in a muscular sac, but the great majority are provided with an exoskeleton or *shell*. The shell-bearing molluscs are popularly divided into *univalves*,

bivalves, and *multivalves*. The univalves are those whose shell consists of only a single piece, often open and cup-shaped, as in the limpet, or more commonly of a long cone wound spirally round a real or imaginary axis, as the garden-snail, the whelk or periwinkle. The bivalves are those of which the shell is formed of two pieces joined by a hinge, as the cockle and oyster. The multivalves have the shell composed of several pieces. These latter molluscs are few in number. The shells of the Mollusca are secreted by the soft integument or *mantle*



Mollusca and Molluscoïda.

1, *Sepia officinalis* (cuttle-fish) and cuttle-bone—class Cephalopoda. 2, *Nerita albicella*—a gastropod. 3, A pteropod. 4, *Terebratula diphya*—class Brachiopoda. 5, *Cytherea maculata*—class Lamellibranchiata. 6, *Cynthia papillosa*—class Tunicata.

(also called the *pallium*). The chief mass of the shell is made up of carbonate of lime with a small proportion of animal matter. The mollusca have a distinct alimentary canal, shut off from the general cavity of the body, and situated between the blood system, which lies along the back, and the nerve system, which is towards the ventral aspect of the body. The digestive system consists of a mouth, gullet, stomach, intestine, and anus, except in a few forms, in which the intestine ends blindly. The blood is almost colourless. Respiration is variously effected: in the lamp-shells, by long ciliated arms springing from the sides of the mouth; in the bivalve shell-fish, the cuttle-fishes, and most of the univalves, by gills; while in the remainder of the univalves, as snails, slugs, &c., the breathing-organs have the form of an air-chamber or pulmonary sac, adapted for breathing air directly. A characteristic of the typical Mollusca is the 'foot' or organ of locomotion, which may be modified so as to perform various offices. Its use in the case of the snail is well known, and in the cockle it is developed to a great

size. In some cases (as the razor-shells) it enables the animal to burrow rapidly in the sand; while in the mussels, &c., the organ is devoted to the secretion of the well-known beard or *byssus*, a collection of strong fibrous threads by means of which these animals moor or fix themselves to rocks, &c. In some bivalves (as the oyster) in which the locomotive powers are in abeyance, the foot is rudimentary. In the cuttle-fishes it is represented by the arms or tentacles round the mouth. The chief peculiarity, however, of the Mollusca is in the nervous system, which in the lower forms consists essentially of a single ganglionic mass, giving off filaments in various directions; while in the higher there are three such masses, united to one another by nervous cords. According as they possess one or three ganglia the Mollusca are divided into two great divisions—*Molluscoidea*, those having a single ganglion or principal pair of ganglia, and the *Mollusca proper*, possessing three principal pairs of ganglia. The Molluscoidea are subdivided into three classes—*Polyzōa*, comprising the sea-mosses and sea-mats; *Tunicata*, the sea-squirts; and *Brachiopoda*, of which *Lingula* and *Terebratula* (the lamp-shells) are examples. The Mollusca proper are divided into four classes—*Lamellibranchiata*, in which there is no distinct head, comprising mussels, scallops, oysters, &c.; *Gasteropoda*, comprising the land-snails, sea-snails, whelks, limpets, slugs, sea-lemons, &c.; *Pteropoda*, all minute oceanic molluscs; and *Cephalopoda*, the highest class, comprising the cuttle-fishes, calamaries, squids, and the pearly nautilus. The Molluscoidea are now usually relegated to a distinct sub-kingdom. See the different classes and chief species.

Molluscoidea, or MOLLUSCOIDEA, a group of animals comprising the Polyzoa, Tunicata, and Brachiopoda. The nervous system consists of a single ganglion or a principal pair of ganglia, and the heart is wanting or imperfect. This group is regarded by some as a class in the sub-kingdom Mollusca, by others as itself a sub-kingdom. See *Mollusca*.

Mollwitz, a village of Prussian Silesia, 25 miles south-east of Breslau. On April 10, 1741, Frederick II. of Prussia gained his first victory over the Austrians under Marshal Neipperg in a celebrated battle fought to the east of Mollwitz.

Molly Maguires, the name assumed by members of a secret illegal association in Ireland, afterwards reorganized in the an-

thracite coal-mining district of Pennsylvania. The organization was guilty of many outrages, and was broken up in 1876, twenty members being hanged for murder.

Moloch, the chief god of the Phœnicians, frequently mentioned in Scripture as the god of the Ammonites, whose worship consisted chiefly of human sacrifices, ordeals by fire, mutilation, &c.

Moloch Lizard, a genus of lizards found in Australia. *M. horridus* (moloch-lizard) is one of the most ferocious-looking, though at the same time one of the most harmless of reptiles, the horns on the head and the numerous spines on the body giving it a most formidable and exceedingly repulsive appearance.

Molokai, an island of the Hawaiian group, about 40 miles long by from 7 to 9 broad. It is noted for its settlement of lepers, all persons on the islands found to be affected with the disease being sent by government to Molokai, and kept entirely isolated from the healthy part of the community. Pop. 2581.

Moltke (molt'kè), HELMUTH CARL BERNHARD, COUNT VON, German field-marshal,



Field-marshal Von Moltke.

born near Mecklenburg 1800; entered the Danish army in 1819; left that service for the Prussian in 1822, and became a staff-officer in 1832. In 1835 he superintended the Turkish military reforms, and he was present during the Syrian campaign against Mehemet Ali in 1839. He returned to Prussia and became colonel of the staff in 1851, and equerry to the crown prince in

1855. In 1858 as provisional director of the general staff he acted in unison with Von Roon and Bismarck in the vast plans of military reorganization soon after carried out. The conduct of the Danish war (1864) was attributable to his strategy, as was also the success of the Austro-Prussian war of 1866, and the Franco-Prussian war of 1870-71. In the latter year he was made field-marshal, and became count in 1872. He retired from the position of chief of the general staff in 1888. Von Moltke died April 24, 1891.

Molucca Crab, the king-crab (which see).

Moluc'cas, or **SPICE ISLANDS**, a name originally confined to the five small islands of Ternate, Tidore, Motir, Makian, and Batschian, but now applied to the widely scattered group lying between Celebes and Papua, between lat. 3° S. and 6° N., and lon. 126° to 135° E. They are divided into the residences of Amboyna, Banda, Ternate, and Menado; the southern portion being governed directly by the Dutch, and the northern indirectly through native sultans. The area is about 45,000 square miles, and the population 500,000. The islands (some hundreds in number) are nearly all mountainous, mostly volcanic, and earthquakes are by no means uncommon. They abound in gaily-coloured birds and gorgeous insects; and are covered by a luxuriant tropical flora. Cloves, nutmegs, mace, and sago are exported to Europe; and birds'-nests, trepang, &c., to China. The Moluccas have been for centuries alternately in the possession of the Spaniards, Portuguese, and Dutch. They were twice taken by the British and given up to Holland, in whose possession they still remain. The natives belong to Malay and Polynesian races, and the general language on the coast is the Malay.

Molybde'num, one of the rare metals, of a white silvery colour, harder than topaz, and having a specific gravity of 8.6; atomic weight, 96. It is unaltered in the air at ordinary temperatures, but is oxidized when heated. The alloys of this metal are generally less fusible, more brittle, and whiter than the metal with which the molybdenum is alloyed.

Momba'sa, or **MOMBAS**, a town on the east

coast of Africa, in lat. 4° 6' S., on an island 3 miles long by $\frac{1}{2}$ mile broad, with one of the best harbours on the coast. The island and town now form part of the territory over which the British East African Company received governing rights from the Sultan of Zanzibar in 1888. The town is dirty and unhealthy, but exports millet, Indian corn, ivory, copal, sesamum (oil-seed), &c. Pop. 20,000. On the mainland opposite is Freretown, a settlement of the Church Missionary Society.

Moment of Inertia, the sum of the products of each particle of a rotating body, by the square of its distance from the axis of rotation, thus indicating the exact energy of rotation.

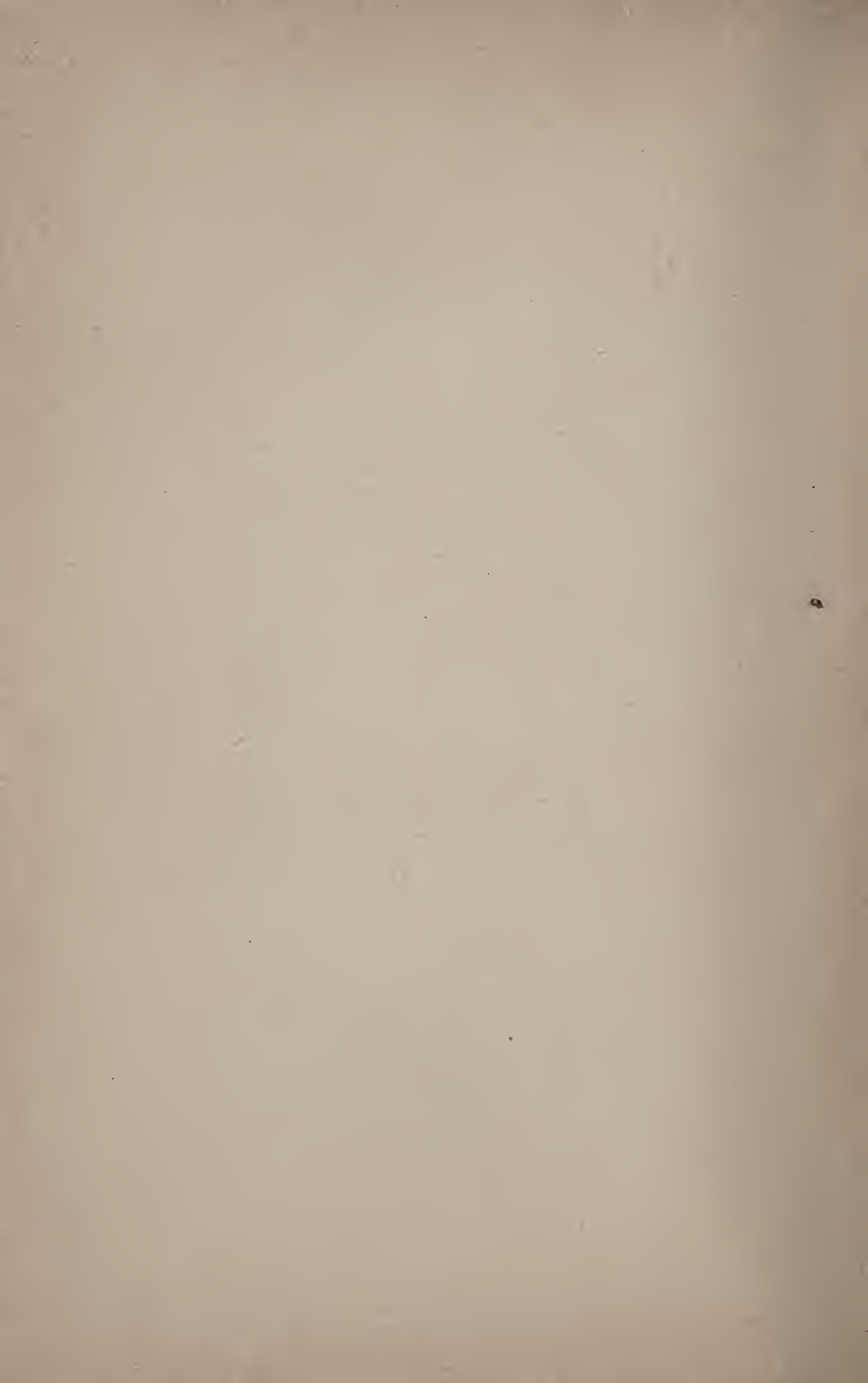
Momen'tum, the quantity of motion of a moving body, measured as the product of the body's mass and its velocity. The unit quantity of momentum most commonly employed is that possessed by a body of the mass of 1 lb. moving with a velocity of 1 foot per second. The C.G.S. unit (see *Dynamics*) is the momentum possessed by a body of the mass of 1 gramme moving with a velocity of 1 centimetre per second.

Mommsen, **THEODOR**, German scholar and historian, born in 1817. He was appointed professor of jurisprudence at Leipzig 1848, professor of Roman law at Zürich 1852; obtained a similar chair at Breslau in 1854; in 1858 went to Berlin as professor of ancient history. His best-known work is a history of Rome, which has been translated into English; but he has also published many other works on Roman history, law, and antiquities.

Mömpelgard. See *Montbéliard*.

Mompox', a town in the Republic of Colombia, on the Magdalena, 125 miles south of Baranquilla. Founded in 1538, it was at one time of considerable commercial importance, but the capricious changes of the river's course have seriously injured its prosperity. Pop. 1890, 10,000.

Momus, the god of mockery and censure among the ancients, was the son of Night. He was expelled from heaven for his free criticism of the gods. Momus is generally represented raising a mask from his face, and holding a small figure in his hand.







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